Edinburgh
Cancer Centre
Capital Development

NHS Lothian
Initial Agreement

Project Owner: Chris Stirling, Site Director WGH

Project Sponsor: James Crombie, Deputy Chief Executive, NHS Lothian

Date: 20th June 2022

Version: 1.1

Document Control

Title:	Initial Agreement, Edinburgh Cancer Centre Capital Development at the Western General Hospital
Owner:	Sorrel Cosens, Senior Programme Manager, NHS Lothian

Version History

Version	Date	Author(s)	Comments:
1	02/06/2022	Sorrel Cosens Hania Klinge Karolina Gibula	First draft set up
1.1	20/06/2022	Sorrel Cosens Leanne Whyte Emma Amor	Finance sections; Clinical Management Team feedback; Cancer Capital Programme Board feedback.

Contents

Table of Contents: Figures

Glossary of Abbreviations

Acronym	Meaning
AEDET	Achieving Excellence Design Evaluation Toolkit
AHP	Allied Health Professional
ANP	Advanced Nurse Practitioner

ATMP	Advanced Therapeutic Medicinal Product
CAR-T	Chimeric antigen receptor T
CAU	Cancer Assessment Unit
CIG	Capital Investment Group
CNS	Clinical Nurse Specialist
CRUK	Cancer Research UK
CT	Computerized tomography
CTH	Cancer Treatment Helpline
CUP	Cancer of Unknown Primary
CVADS	Central Venous Access Devices
DEXA	Dual-energy X-ray absorptiometry
EAMS	Estates and Asset Management System
EBCD	Experience Based Co-Design
EBU	Edinburgh Breast Unit
ECC	Edinburgh Cancer Centre
ELCH	East Lothian Community Hospital
ERCP	Endoscopic retrograde cholangiopancreatography
FBC	Full Business Case
FM	Facilities Management
GFR	Glomerular Filtration Rate
HAI	Healthcare Associated Infection
HBN	Health Building Notes
HDR	High Dose Radiation
HEI	Healthcare Environment Inspectorate
HFN	Health Facilities Notes
HFS	Health Facilities Scotland
HFS3	Health Facilities Scotland Framework
HPS	Health Protection Scotland
HTM	Health Technical Memoranda
IA	Initial Agreement
IIA	Integrated Impact Assessment
IPCT	Infection Control and Protection Team
ISD	Information Services Division
KPI	Key Performance Indicators
LDR	Low Dose Radiation
MDC	Multidisciplinary Diagnostic Centre
MRI	Magnetic resonance imaging
NDAP	NHS Scotland Design Assessment Process
NEC	New Engineering Contract
NPV	Net Present Value
NRS	NHS Research Scotland
NSS	National Services Scotland
OBC	Outline Business Case
OPD	Outpatient Department
OT	Occupational Therapy
PAMS	Property and Asset Management Strategy
PPE	Post Project Evaluation
PSCP	Principal Supply Chain Partner
R&D	Research and Development
RAI Room	Radioactive Iodine Room
RARP	Robotic Assisted Radical Prostatectomy
RDC	Rapid Diagnostic Centre

RHCYP	Royal Hospital for Children and Young People
RIBA	Royal Institute for British Architects
RIE	Royal Infirmary of Edinburgh
SABR	Stereotactic Ablative Radiotherapy
SACT	Systemic Anti Cancer Therapy
SBRT	Stereotactic Body Radiotherapy Treatment
SCAN	South-East Scotland Cancer Network
SCIM	Scottish Capital Investment Manual
SGHSD	Scottish Government Health and Social Care Directorate
SES SCRN	South-East Scotland Cancer Research Network
SG	Scottish Government
SHFN	Scottish Health Facilities Notes
SHPN	Scottish Health Planning Notes
SHTM	Scottish Health Technical Memoranda
SJH	St John's Hospital
SMC	Scottish Medicines Consortium
SNBTS	Scottish National Blood Transfusion Services
SPSP	Scottish Patient Safety Programme
SRO	Senior Responsible Officer
TCT	Teenage Cancer Trust
TYAC	Teenage and Young Adults with Cancer
UGI	Upper Gastrointestinal
UOE	University of Edinburgh
WGH	Western General Hospital
WTE	Whole Time Equivalent

1 Executive Summary and Purpose

1.1 Purpose

An ambitious programme of work on cancer services commenced in 2018, reviewing opportunities for the transformation of experiences for cancer patients from across the South East of Scotland. Stakeholders including patients, clinicians, other staff, charities, academic institutions and the NHS Boards for Borders, Dumfries and Galloway, Fife and Lothian are in agreement on the vision for the Edinburgh Cancer Centre.

To develop a world class specialist cancer centre and service on behalf of the region – and nation.

To be recognised as a world leading centre for cancer research, innovation and clinical academic opportunities.

This Initial Agreement (IA) outlines the approach taken to the development of a clinical service model through regional engagement and the high level scope of infrastructure requirements for this cancer service model. The practical implementation of the preferred service model will be developed across the South East region and detailed as part of the Outline Business Case process.

Specifically, the purpose of this IA is:

- To build on the Strategic Assessment (Appendix 1) for the reprovision of the regional cancer centre completed and first submitted to Scottish Government in 2016.
- To demonstrate the need for change in cancer services and facilities and to describe how addressing this which will have a significant impact on patients, staff and other project stakeholders alongside the wider economy, environment and communities.
- To seek approval from the Scottish Government Health and Social Care Directorate (SGHSCD) through their Capital Investment Group (CIG) to develop an Outline Business Case (OBC) for the reprovision of the Edinburgh Cancer Centre (ECC), a South East Scotland Development hosted and led by NHS Lothian on behalf of the region, on the Western General Hospital (WGH) site.
- To share the projected costs at this Initial Agreement stage:
- These costs are based on programme completion ten years from the approval of this Initial Agreement.

1.2 Background and Strategic Context

1.2.1 National Context

The vision for this project aligns with national strategies (details of which are contained within Appendix 2 of this document), however, of particular significance is the alignment with the Scottish Government *Beating Cancer, Ambition and Action Strategy (2016)* and the 2020 refresh of this strategy.

The proposed Clinical Model specifically addresses the following aspects:

Earlier diagnosis - A focus on early cancer diagnosis through direct access to diagnostics and the role of imaging in accurate and timely diagnosis of cancer.

'Prehabilitation' – Holistic patient approach through a wellness programme, patient education and empowerment.

Treatment - Consistency and equity of treatment access, in standard of care and clinical trials settings, for patients across the South East of Scotland. Services will be planned and delivered locally wherever possible.

Best care and support for all people with and beyond cancer – Working closely with third sector organisations to provide access to individually tailored patient information, support and advice, patient education and timely access to palliative care where appropriate in the patient pathway.

Whole system actions - Integration of clinical research and trials with cancer services through physical co-location and service model collaboration.

Using data for improvement – Developing Phase II of the South East Scotland Cancer Information Programme to provide a detailed, comprehensive Regional Cancer Information Service to facilitate smooth and efficient data driven innovation.

Cancer is a priority for NHS Scotland and will remain so as NHS organisations continue to recover and remobilise following COVID-19.

During the pandemic, constrained capacity has been directed to support the most clinically urgent patients. This has meant that the majority of cancer treatments have continued as planned, with some patients receiving in independent sector capacity prioritised for cancer work (e.g. robotic prostatectomy).

Referrals to scheduled care have already returned to pre-covid-19 levels, but the proportion of urgent referrals received, including numbers of people referred with an urgent suspicion of cancer, has exceeded pre-Covid-19 volumes. Most recently a number of mutual aid requests across cancer services have been made to NHS Lothian, from Medical Directors from other territorial Health Boards also facing specific capacity challenges.

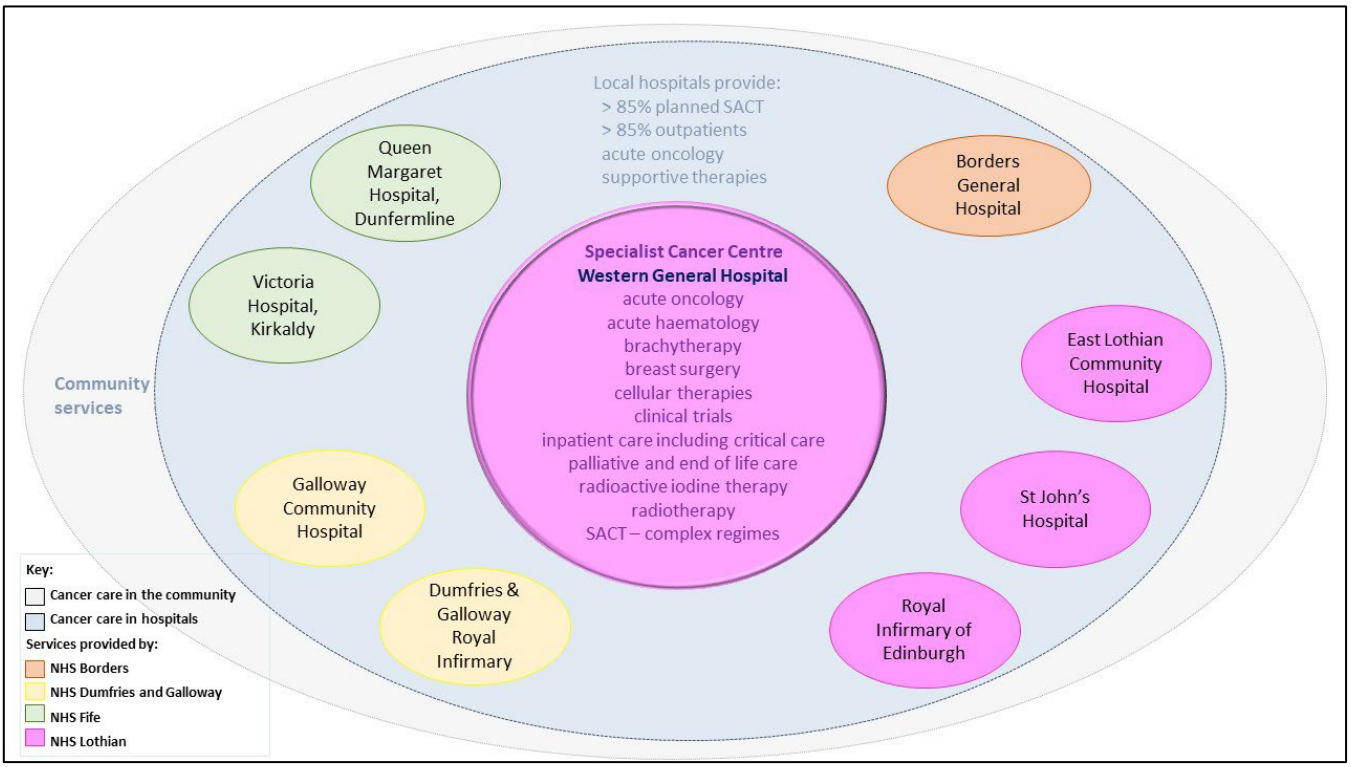
1.2.2 South East Scotland Regional Context

Cancer is a priority for NHS Scotland. As a member of the South East Scotland Cancer Network (SCAN), NHS Lothian works in partnership with NHS Borders, NHS Dumfries and Galloway and NHS Fife to plan and deliver cancer services across the South East of Scotland. The population across the SCAN Boards is circa 1.5m (or 27% of the Scottish population) of which 1 in 3 will have a diagnosis of cancer and 1 in 4 will die from cancer.

Currently, ECC also provides a range of specialist oncology services on behalf of NHS Tayside to a catchment population of 400,000. It is assumed that this is a temporary arrangement. Scottish Government is currently undertaking a national strategic review of Oncology Services. If this results in substantive changes to catchment areas, this proposal can be amended at OBC stage.

SCAN members are committed to providing the best care possible as close to the patient's home as they can. Approximately 80% of Oncology and Haematology services are delivered over multiple day-case and outpatient attendances. The need to travel to access care and clinical trials can in some cases be a barrier to access, and a physical, emotional, and financial challenge for patients and their families whilst on treatment.

Figure 1 : Cancer services and care settings for the SCAN region



NHS Borders, Dumfries and Galloway and Fife have worked with NHS Lothian and advisors, including healthcare planners, to review the service model and options presented in this proposal. Through the Regional Cancer Advisory Group (RCAG) the regional Chief Executives have reiterated commitment and partnership for development of the business case, starting with this Initial Agreement, and to delivering transformation of the cancer pathway for patients from across the region.

1.2.3 Lothian Context

This proposal delivers on NHS Lothian Corporate Objectives (2018-2023) and the strategic vision articulated in the Lothian Hospitals Plan. The latter sets out NHS Lothian's strategic intent for each of the acute sites, providing a framework for development and a focus for investment on each site. The plan seeks to address the challenges of changing demography, clinical demand, workforce, condition of estate and provide an organisational focus to investment decision and management effort.

The strategic headline for each of the three acute hospitals is presented in the table below.

Figure 2: Lothian hospitals plan

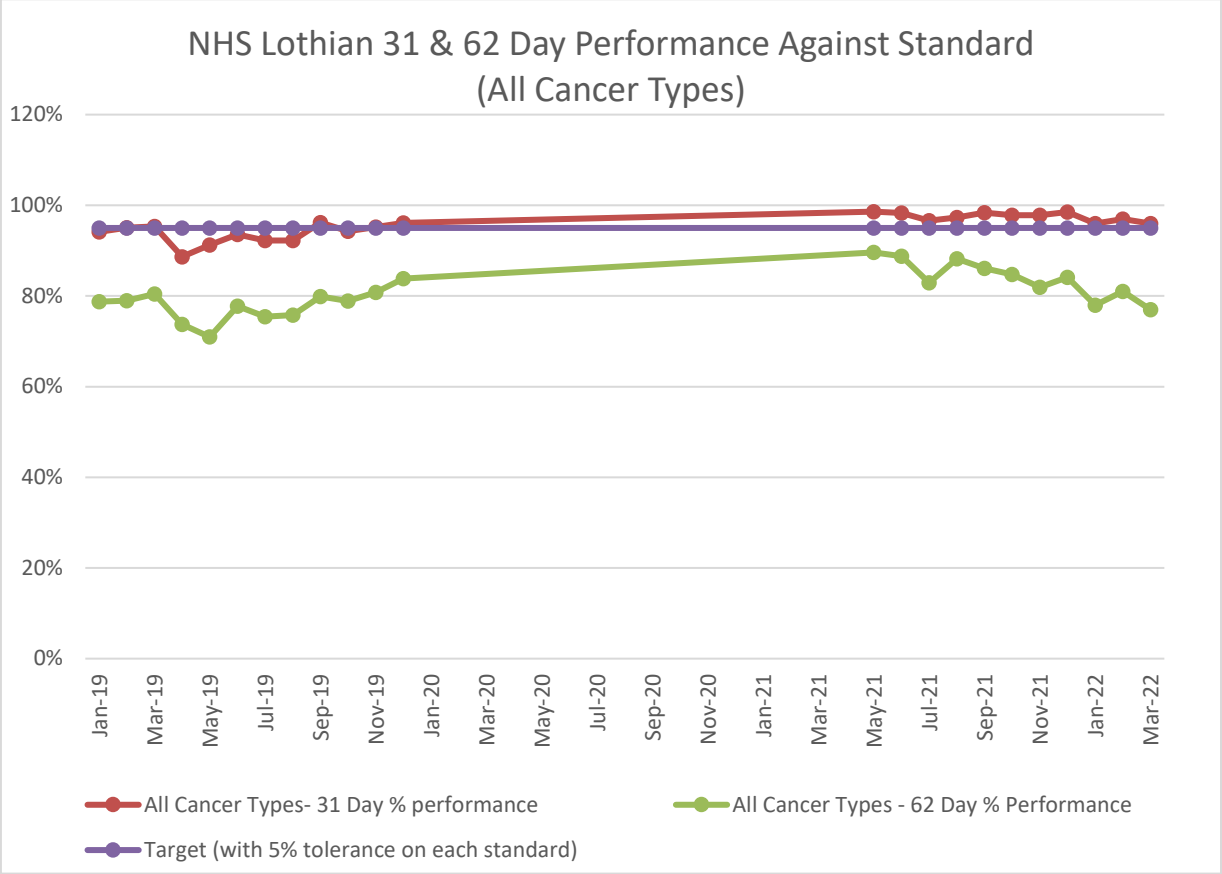
Site	Strategic Headline
Royal Infirmary of Edinburgh	South East Scotland's emergency care centre, incorporating a major trauma centre, orthopaedic services, neurosurgery, and children's tertiary care
St John's Hospital	An elective care centre for Lothian and for the South East Scotland region, incorporating highly specialist head and neck, plastics and ENT services
Western General Hospital	**The Cancer Hospital for South East Scotland, incorporating breast, urology and colorectal surgery and Critical Care**

We know demand for planned care will increase based on changing demographics. Lothian's population is ageing more quickly than the rest of Scotland. In 2028 it is projected that there will be almost 10,000 fewer people aged under 30, and 40,000 more people aged 60 and above.

The number of people in Lothian referred with an urgent suspicion of cancer are now significantly above previous levels, particularly in dermatology, gastroenterology, gynaecology, and respiratory medicine.

While the 31 day cancer waiting times standard has been consistently met throughout the pandemic (from decision to treat to first treatment), the 62 day standard remains challenged across a number of tumour groups in NHS Lothian, and across NHS Scotland (from urgent suspicion of cancer (USC) referral to first treatment).

Figure 3: NHS Lothian Cancer Waiting Times Performance January 2019-March 2022[1]



1.3 Need for Change

1.3.1 Rising Demand for Cancer Services

Demand for cancer services has risen annually in response to a number of key drivers. It is too early to know how these will be impacted by the COVID-19 pandemic, however in the longer term it is anticipated that the underlying trends will continue:

- Increasing population within Lothian (10% between 2010-2019) and the SCAN region (6% between 2010-2019) with growth expected to increase by a further 15% (Lothian) and 7% (SCAN) in the next 25 years;
- Ageing demographic;

[1] Cancer Performance Team, NHS Lothian, 2022

- Increased cancer incidence, across the SCAN region which is projected to increase by a further 22% by 2025;
- Improved diagnostic techniques and capabilities;
- Improved detection and increased uptake of screening;
- Increased number of effective treatment options licensed and Scottish Medicines Consortium (SMC) approved;
- Increased duration of use of multiple regimes of Systemic Anti-Cancer Treatment (SACT) as a result of better efficacy and greater tolerability of modern SACT agents;
- Improved Radiotherapy modalities and techniques – increased indications for Radiotherapy and development of advance techniques as alternatives to surgery;
- Increased use of lifelong Supportive Therapies.

Many more people are also living with and beyond cancer resulting in a need to focus on early prevention and detection to optimise treatment and minimise morbidity and mortality. The increase in the number of patients surviving cancer, adds substantially to the complexity of care planning and delivery for those who are living with the consequences of cancer or cancer treatment.

Achieving the vision of transformed and improved cancer services and pathways for adult patients from across the South East region will:

- Provide a response to rapidly increasing demand and increasing cancer incidence across the South East region;
- Streamline patient pathways and maximise efficiencies based on a patient focused, holistic approach;
- Offer a range of specialist cancer therapies to patients in the South East region;
- Provide facilities to deliver safe and effective, high quality clinical care, designed to optimise efficiencies and new technologies;
- Provide care closer to home where clinically appropriate and financially viable;
- Make opportunities available to ensure recruitment and retention of specialist staff; including teaching, training, research and academic opportunities;
- Provide equitable access to the most innovative therapies, optimise resource utilisation and patient outcomes by integrating cancer research with core services across the South East region.

1.3.2 Current Edinburgh Cancer Centre facilities

A major challenge to the delivery of cancer services on the Western General Hospital (WGH) site is the outdated infrastructure of the Edinburgh Cancer Centre (ECC). The main buildings were constructed in the 1950s and no longer meet the needs and expectations of modern healthcare.

Over several years, from as early as 2010, Healthcare Environment Inspectorate (HEI) inspections and Scottish Patient Safety Programme (SPSP) visits have highlighted that Cancer Services on the Western General Hospital site are not sustainable in their current configuration. Some of the region's most immunocompromised patient groups are thus accommodated in poor quality shared bays with multiple patients sharing toilets.

Clinical risks associated with this increased sharply with the onset of the COVID-19 pandemic. Beds and treatment chairs had to be removed from clinical areas to achieve safe physical distancing. As services remobilise and underlying regional demand continues to grow over time, it will become impossible to effectively maintain safe distancing and infection control, along with timely access to specialist cancer care without a commensurate expansion of space and essential capacity.

The poor quality of accommodation and pressures on space were further acknowledged through Scottish Government approval of the programme of Oncology Enabling Projects currently underway. In the knowledge that development of a new Edinburgh Cancer Centre would take several years, the Full

Business Case to address immediate compliance issues was approved in September 2020 and the programme will complete in 2023.

Although these projects will improve current facilities, they are largely within existing infrastructure and, therefore, required NHS Lothian (and subsequently the Scottish Government) to agree derogations from current applicable healthcare building standards and other relevant guidance that cannot be met within the scope of these options.

In order to meet all applicable building and clinical standards as well as respond to a rapidly increasing demand for cancer services by delivering a transformed model of care, a full reprovision of the ECC is required.

Furthermore, if necessary changes implemented during the COVID-19 pandemic (e.g. reduction in inpatient and assessment capacity for safe physical distancing, isolation rules, reduction in hospice beds, etc) are not able to be reverted, this presents a further significant challenge to delivering care which in turn further accelerates the urgent requirement for change.

The capital investment made in the building infrastructure by the projects outlined above will continue to be realised, post Cancer Centre construction, as part of the wider site masterplan for the Western General Hospital.

1.4 Investment Objectives

By assessing the existing situation and the drivers for change, the changes required to deliver the vision were identified and defined as the investment objectives.

These were discussed and developed with key stakeholders at an early stage of the process and development of the proposed Clinical Model addresses these objectives as outlined below. Key stakeholders included patients and families, multidisciplinary staff in ECC and across the SCAN region, NHS Boards and charities, the full list is at Appendix 3.

Figure 4: Investment Objectives

Effect of the need for change on the organisation:	What has to be achieved to deliver the necessary change? (Investment Objectives)
Facilities and existing capacity unable to meet projected demand resulting in patient treatment delays	Increase service capacity and sustainability to meet demand and provide timely service access for patients
Safety issues highlighted in Healthcare Environment Inspectorate (HEI) reports Patient experience, privacy and dignity are not optimum in current accommodation Split locations result in inefficiencies in service provision, duplication of work, loss of possible collaboration	Design buildings to provide appropriate facilities for clinical care that meet all required standards, allow service collaboration and provide an improved patient experience
Workforce challenges causing detrimental effect on service provision and capacity	Improve recruitment and retention of specialist staff Offer a range of education, training, research

Effect of the need for change on the organisation:	What has to be achieved to deliver the necessary change? (Investment Objectives)
	and academic opportunities for professional development
Patients travelling to other UK centres/ abroad for certain treatments	Offer a wide range of cutting edge specialist cancer treatment options to patients of South East Scotland, and improve resilience in Scotland's specialist care for the people of Scotland
Improve equity of access to specialist care in South East Scotland	Patients in South East Scotland do not have access to modern treatment facilities and full range of treatment options available elsewhere in Scotland
NHS Lothian unable to participate in full complement of trials	Integration of Clinical Research and Trials with Cancer Services to enable access to an expanded range of trials and improve patient outcomes

1.5 Options Assessments and Preferred Option

In 2019-20 the Cancer Project Team led work to identify options for the new proposed service model for cancer, including facilities, and appraise these with stakeholders.

In 2021-22, working with a healthcare planner, these options were further developed alongside a refreshed service model.

The options were assessed at a high level in line with Scottish Government Capital Investment Manual (SCIM) guidance relevant to the IA stage of the business case process.

The emphasis in these assessments was on the clinical model of care and how it could be delivered rather than on the specifics of a new cancer centre building design.

Options were assessed against the investment objectives for the project.

1.5.1 Option B1 – Do nothing

This option relates to cancer services remaining at the WGH in their current location and with no change to the service delivery model. It is included as a baseline comparator.

The projected demographic change and cancer incidence growth that will impact on the demand for services is outlined in section 2.3.1, Population and Cancer Incidence Data.

The only changes to the facilities would be statutory improvements, and would still require some derogations from modern standards.

1.5.2 Option B2 – Optimum service model

This option represents a purpose built regional specialist cancer centre with accommodation and infrastructure designed to meet current applicable clinical standards. This option seeks to address future projected demand whilst making changes to cancer pathways across the region, including

- maximising new technologies and therapies
- increased access to clinical trials
- further shift of care to as close to home as possible
- reduction in unplanned attendances and admissions
- improved clinical outcomes, capacity utilisation, demand management through expansion of research and innovation

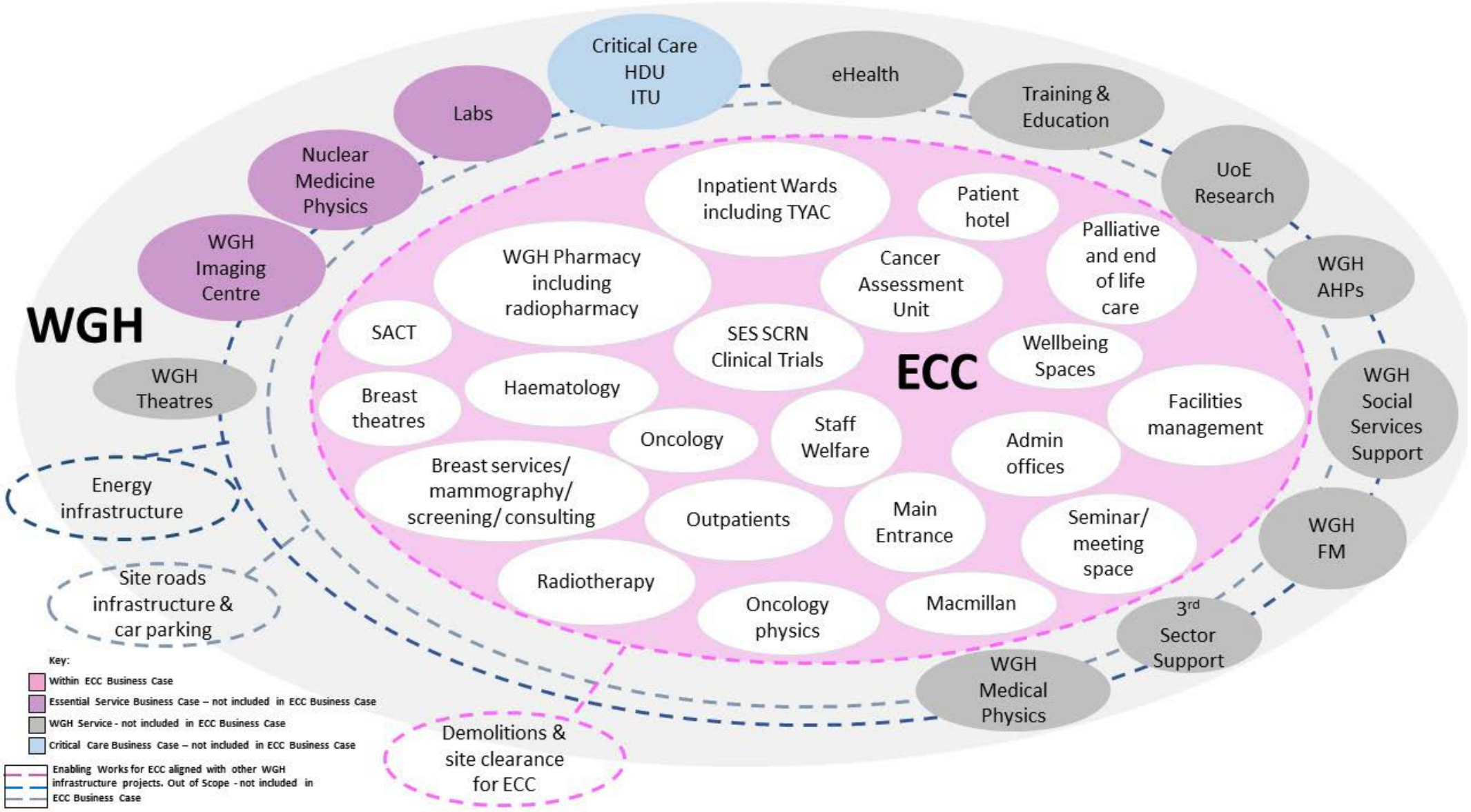
This option was scored as the preferred option in the benefits assessment, financial assessment and economic appraisal, as described in detail later in this proposal.

1.5.3 Option B3 – Decentralised radiotherapy

This option delivers the optimum service model and facilities described in option B2 above, with the variation that as well as a radiotherapy hub in the specialist regional centre, a satellite radiotherapy unit would be located on another acute hospital site in South East Scotland.

It is proposed that option will also be developed for Outline Business Case for full appraisal of the benefits and costs of a regional satellite for radiotherapy.

Figure 5: Edinburgh Cancer Centre reprovision in the context of the wider WGH site services and developments



1.6 Financial Assessment

The Financial Case sets out the capital and revenue costs of the shortlisted options. The assumptions within the Financial Case will continue to be challenged and refined through development of the Outline Business Case. The below table summarises the estimated capital costs for the preferred option, alongside the costs detailed in the 2020 version of the IA.

Figure 6: Capital costs summary

Capital Cost (£m)	Option A5 Enhanced reprovision (2020 IA)	Option B2 Optimum service model (Preferred option)
Construction	237.9	352.6
Professional Fees & NHS Project Team Fees	17.0	28.2
Other Costs (Surveys, IT, Estates)	4.6	7.6
Equipment	49.1	72.3
Site Enabling Allowance	-	1.0
Legal/Statutory Costs Allowance	-	0.5
Arts and Therapeutic Design	-	11.3
Inflation	82.2	235.5
Optimism Bias	145.7	264.5
Total Cost (excl VAT)	**536.5**	**973.5**
VAT	107.3	194.7
Total Capital Cost	**643.8**	**1,168.2**

The estimated capital costs have risen from £643.8m to £1,168.2m since the original IA was submitted. The indicative movement of £524.4m from the previous IA is significant and is summarised in the table below.

Figure 7: Drivers of capital cost movement

Driver	£m
Capital Cost Option A5 Enhanced Reprovision (Previous IA)	**643.7**
+ increase in construction and equipment cost	137.9
+ increase in fees	11.2
+ increase in other costs	15.9
+ inflationary increase	153.3
+ optimism bias increase	118.8
+ VAT increase	87.4
Capital Cost Option B2 Optimum Service Model (Preferred Option)	**1,168.2**

The increase in construction and equipment cost follows an increase in GIFA required of 19.9%. This was partly driven by revisiting earlier work on the clinical service model and refreshing the proposal that was submitted in the 2020 version of the IA, although this only identified a small increase in clinical spaces required. The majority of the 19.9% GIFA increase is driven by additional allowances for updated guidance on net zero carbon and other infrastructure.

The majority of the movement from the previous IA is driven by market conditions observed to date, a prudent increase in inflation assumptions, and corresponding increases in optimism bias and VAT.

The below table summarises the estimated revenue costs for the preferred option.

Figure 8: Revenue costs summary

Incremental Recurring Revenue Cost/year (£k)	Option B2 Optimum service model
Staffing	16,208
Drugs	29,815
Other Non-Pays	3,071
Total Annual Incremental Revenue Cost	**49,094**

1.7 Readiness to Proceed

The Board's preferred procurement strategy is that of a capital funded project utilising the established Health Facilities Scotland Framework (HFS3). This should facilitate the earliest start on site. However, the Board acknowledge that, should the funding arrangement be of a revenue nature, a form of private/ public finance initiative would be employed.

Professional services could likewise be procured via the HFS3 Framework for all lead appointments and for more specialist services such as clerk of works and validating engineers indirectly via lead appointments. It is the Board's view that provision of independent assurance via NHS National Services Scotland (NSS) is essential and that NSS may consider the need to outsource some, or all, of this assurance via a shadow design team who would be able to scrutinise, in sufficient depth, the design and execution of that design during construction and commissioning. Further work will be required to determine the cost and programme impact of these additional assurance requirements.

The current estimate for service migration, based on an approved IA in late 2022, is Q3 2032.

A clear distinction between those delivering and providing the facility (the project team) and those who will use the facility (project sponsor and project owner) is seen as essential to ensure the level of governance and assurance necessary. In addition, independent assurance that all current and relevant HFS and HPS requirements are being met, should be given to the Board and Scottish Government by NSS Assure.

The project team delivery model proposed which includes internal NHS Lothian advice from Infection Prevention and Control (IPCT), Fire, Health and Safety, eHealth and Estates and Facilities, amongst others, as the project develops. Continuity of staff over the proposed timeline will be prioritised to ensure knowledge transfer through the various phases from specification through design and construction to commissioning and final completion.

1.8 Conclusion

The reprovision of the Edinburgh Cancer Centre presents the opportunity to transform pathways for adult cancer patients across the South East region by developing a robust, sustainable Regional Service Delivery Model to respond to the rising demand for cancer services across the region, ultimately improving timely access to services and improving patient outcomes.

Addressing the need for change through implementation of the proposed clinical model with its wide range of associated benefits, will have a significant positive impact on patients, staff and other project stakeholders alongside the wider economy, environment and communities.

It will also address key strategic aims as outlined in the 2020 refresh of the Scottish Government Cancer Policy *Beating Cancer, Ambition and Action Strategy (2016)* and the 2020 *Recovery and Redesign: Cancer Services – Action plan.*

Furthermore, this reprovision will facilitate Scottish Government's aims to reduce health inequalities and barriers to access cutting edge therapies, as set out in the *Build Back Fairer*[2] report.

Ongoing collaborative regional service transformation work is critical in delivering a transformed clinical model by the time a new Edinburgh Cancer Centre is constructed alongside supporting sustainable services in the short to medium term. NHS Lothian, Fife, Borders and Dumfries and Galloway will continue to work together to deliver an ambitious 'Regional Transformation Programme' with a commitment to developing this as part of the 'roadmap' to Edinburgh Cancer Centre reprovision.

Delivery of the reprovision programme in a reasonable timeframe is essential to ensure that the articulated needs for change are addressed and associated benefits realised, whilst mitigating against ongoing risks connected with current service delivery as demand continues to grow.

[2] Build Back Fairer: The COVID-19 Marmot Review; The Health Foundation and Institute of Health Equity, December 2020

2 The Strategic Case

2.1 Strategic Context

2.1.1 National Context

Cancer is a priority for NHS Scotland, along with the need to tackle health inequalities as set out in the recent *Build Back Fairer* report.

In March 2016, NHS Scotland published our national cancer strategy: *Beating Cancer: ambition and action*[3], with an update on progress, published April 2020, against the following key aims:

- more people surviving cancer for 1, 5 and 10 years
- closing the gap in survival rates between Scotland and the best countries in Europe
- a reduction in cancer health inequalities
- people with cancer and their families feeling involved in decision making
- a radical improvement in experience and quality of life, including at the end of life
- a reduction in the growth in the number of people diagnosed with cancer
- more equitable access to services and treatment

The national *Recovery and Redesign: Cancer Services – Action plan*[4], published December 2020, supersedes the national cancer strategy above, taking most of these aims and actions forward into this plan, and this is about to be superseded by a new 10 year National Cancer Strategy.

The National Cancer Plan encompasses a programme of work underway to redesign cancer services and increase services resilience. The three key aims of the National Cancer Plan are:

1. **Adopt a 'Once for Scotland' approach, where appropriate, to cancer services**. This will see the same prioritisation and delivery of services is used across Scotland, helping ensure patients across Scotland receive equitable access to care and treatment.
2. **Create smoother and more efficient patient pathways**, from initial referral and diagnosis to the personalised care and support received after treatment, with the aim of improving both outcomes and experience throughout an individual's journey.
3. **Integrate innovative solutions** to cancer services as we continue to learn from the impact COVID-19 has had on the NHS; improving access to cancer services, both remotely and in person, and minimise the impact on waiting times.

The plan commits to incorporate the new ways of managing cancer pathways and services across NHS Scotland that have emerged as a result of COVID-19, with headline actions including:

- Early Cancer Diagnostic Centres
- Single Point of Contact Pilots
- Digital Pre-habilitation Resource
- Establishment of Scottish Cancer Network

A refresh of the framework for effective cancer management[5] (initially developed in 2018) published 3 December 2021 has been provided as a guidance tool for Cancer Teams across NHS Scotland, to improve and sustain performance of the National Cancer Standards.

2.1.2 Regional Context

The South East Scotland Cancer Network (SCAN) brings together cancer professionals and organisations from primary, secondary and tertiary care across the South and East of Scotland to work in a co-

[3] Beating Cancer: ambition and action; Scottish Government, March 2016
[4] Recovery and redesign: cancer services - action plan, Scottish Government, December 2020
[5] Effective Cancer Management: Framework

ordinated manner, transcending geographical, organisational and professional boundaries to ensure equitable provision of high quality, clinically effective, patient-centred cancer services. Local networks of the constituent Boards of NHS Borders, Dumfries and Galloway, Fife and Lothian link with all local organisations with an interest in cancer services including Health & Social Care, Local Health Councils, Cancer Patient Support groups, Universities and Local Government. The added value of SCAN is the bringing together of the energy, enthusiasm and expertise of all those committed to improving cancer services for a population of approximately 1.5m people.

Figure 9: Scottish Regional Cancer Networks

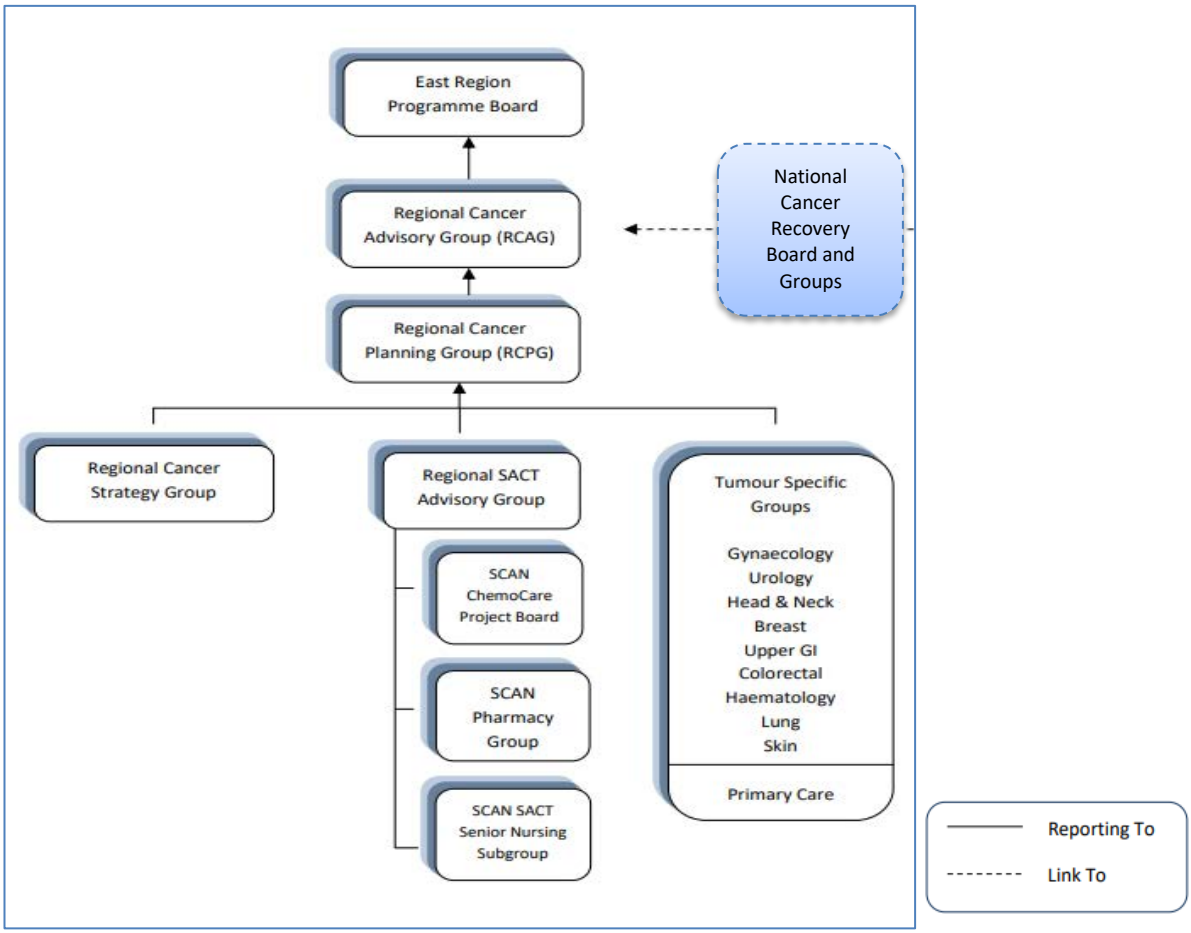
SCAN leads on the regional collation and reporting of data and Quality Performance Indicators to support service improvements, ensure national standards are met and that clinical practice is delivered to an equitable high standard. Nine regional tumour specific groups underpin the Managed Clinical Network alongside a range of other professional and specialty groups such as pharmacy, SACT, nursing and lead clinicians, to drive forward improvements in care and outcomes for patients.

The four territorial NHS boards in SCAN are developing their cancer strategies in response to the national and regional context, and are sharing and working to align these through the Regional Cancer Strategy Group.

SCAN is part of the wider East region regional planning arrangements, reporting to the Regional Cancer Advisory Group (RCAG). RCAG provides a regional governance role and is responsible for agreeing and overseeing delivery of the SCAN Work Plan and any emerging projects.

For the SCAN region, NHS Lothian provides the tertiary haemato-oncology services for approximately 1.5 million people in the Edinburgh Cancer Centre (ECC), located on the Western General Hospital (WGH) site. This catchment expanded by a further 400,000 people in 2022, as ECC became a provider of some specialist oncology services on behalf of NHS Tayside.

Figure 10: South East Cancer Network



On the journey from IA to Outline Business Case, NHS Borders, NHS Dumfries and Galloway, NHS Fife and NHS Lothian will continue to work together on the regional cancer strategy and transformation programme. All SCAN Boards are committed to this as part of the roadmap to Edinburgh Cancer Centre reprovision.

2.1.3 *NHS Lothian Strategic Context*

The Lothian Strategic Development Framework, adopted by the Board in 2021, emerged from previous work on the Lothian Hospitals Plan *Our Health, Our Care, Our Future*, which was intended to cover the years 2014-2024, and the Lothian Hospitals Plan. The impact of first wave of the Covid-19 pandemic was such that during the late summer of 2020, NHS Lothian began working with the Royal Society of the Arts, using their Future Change Framework, to review our learning thus far and what this meant for the future.

Based on this work the NHSL Board adopted a series of principles and assumptions, and agreed fixed points to provide the Lothian Strategic Development Framework (LSDF) with parameters to work within. Within this set of parameters are a number with specific relevance to this proposal:

- We expect to increasingly emphasise prevention and self-management of disease, supporting this with community services and new technologies;

- We want to move care closer to home where we can. The citizen's home will be the key fixed point for how services are designed and delivered. We believe that we should have very good clinical reasons to ask someone to come to one of our facilities;
- Building on learning from the pandemic we will use digital communications technologies such as NHS Near Me to replace appointments in person, when this is appropriate to do so;
- Services will be co-produced with residents and interactions and engagements will support shared decision making and realistic medicine in all aspects of care including end of life with an aim to deliver person centred outcomes;

The framework acknowledges the current limitations with regards to some of our existing health care facilities both in their functional and capacity limits:

- We will work to improve our health and care facilities whenever and wherever we can, and remain committed to our campuses at the Royal Edinburgh Hospital, Royal Infirmary of Edinburgh, St John's Hospital, and the Western General.
- When we do need to build new facilities, we will work with our partners from across the public square to ensure that these are multi-use - it doesn't matter to the citizen what the nameplate on the building says – it matters that we make it easier for the citizen to get the right help;
- We are clear that the Western General will be the home for the new Edinburgh Cancer Centre, which will be the Cancer Centre for the South East of Scotland
- We will begin the construction of a new regional Cancer Centre on the Western General campus, which will include specialist diagnostics, breast care, and chemotherapy and radiotherapy services;

Our elective care services – including diagnostic tests and cancer waiting times – have been most heavily and negatively impacted by the Covid-19 pandemic.

It is known that, pre Covid-19, NHS Lothian had a recurrent capacity deficit in scheduled care, which was a key driver for the board's cases for:

- A new facility on the St John's Hospital (SJH) campus for high volume non-complex planned surgery, releasing capacity at the Royal Infirmary of Edinburgh (RIE), SJH and the WGH for more complex planned activity,
- A replacement for the Eye Pavilion in Edinburgh,
- A new cancer centre at the WGH.

Figure 11: The Western General Hospital site, with Edinburgh Cancer Centre facilities outlined in blue

As we work towards additional physical capacity, planned towards the end of the five-year LSDF timescale, our efforts are also focussed on maximising the efficiency of services and utilisation of resource to allow us to improve performance. Given the challenges faced by the Board compounding a historic capacity deficit, continued prioritisation of care towards those most clinically urgent will remain, as reflected in NHS Lothian's Corporate Objectives for 2022/23.

Specific to cancer service provision, NHS Lothian completed a gap analysis of current services of pathways against the 2021 Framework for Effective Cancer Management[6] provided by Scottish Government. Clinicians and service management reviewed the key elements of the Framework outlined below to identify inconsistency in application across tumour groups and pathways:

1. Corporate Responsibility
2. Optimal Referral
3. Initiating the Pathway
4. Dynamic Tracking and Escalation
5. Optimal Diagnostics
6. Effective multidisciplinary working
7. Treatment
8. Collective Strength

It is the work of the Cancer Recovery Board to implement the resulting action plan, reporting to the NHS Lothian Scheduled Care Recovery Board.

[6] Effective Cancer Management: Framework

2.2 Existing Arrangements

2.2.1.1 Cancer Services Across the SCAN Region

Where possible, clinical assessment, diagnosis and treatment of suspected cancer are undertaken in the NHS Board of the patient's residence, however some regional patients will be referred for specialist care under the Edinburgh Cancer Centre. The level of provision varies across the region according to facilities and availability of specialist staff groups.

Systemic anti-cancer treatment (SACT) is provided locally in Borders, Dumfries and Galloway, Fife and Lothian. Highly complex regimes will be delivered in ECC.

There is provision for Breast Surgery in Borders General Hospital, Queen Margaret Hospital in Dunfermline, Fife and at Dumfries and Galloway Royal Infirmary as well as in St John's Hospital, Livingston and ECC in Lothian.

Inpatient provision for haematology and oncology patients in Borders is not in designated cancer beds. Similarly, NHS Dumfries and Galloway have no specified beds for oncology patients (haematology beds fall under the West of Scotland Cancer Network and not SCAN). NHS Fife has an inpatient haematology ward, but refers patients to ECC for specialist therapies such as Stem Cell Transplants.

In 2019 NHS Dumfries and Galloway stated their intention to align their services with the West of Scotland, however the subsequent impact of Covid-19 on services and strategic planning led to this work being paused. In 2022 NHS Dumfries and Galloway (D&G) confirmed to SCAN that the current oncology pathways to ECC should be included in the reprovision planning.

Figure 12: Regional Cancer Service overview by Board

	Radio-therapy	SACT	Outpatient			Breast	Stem Cell Transplants	Inpatient		
			Haem	Onc	Breast			Haem	Onc	Breast
Lothian	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Borders	X	✓	✓	✓	✓	✓	X	X	X	✓
Fife	X	✓	✓	✓	✓	✓	X	✓	X	✓
D&G[7]	X	✓	X	✓	✓	✓	X	✓	X	✓

This IA will focus on the reprovision of the Edinburgh Cancer Centre, including the specialist regional cancer services hosted by NHS Lothian. Central to the clinical service model are the patient pathways across Borders, Dumfries & Galloway, Fife and Lothian, providing care closer to home wherever a sustainable regional service delivery model is possible.

2.2.1.2 Edinburgh Cancer Centre – an Overview

The Edinburgh Cancer Centre (ECC) is the tertiary regional facility at the centre of the Haematology and non-surgical Oncology services for adult patients from a catchment of approximately 1.9 million people[8] across the SCAN region and Tayside.

[7] Oncology services provided under the SCAN network and haematology through the West of Scotland (WOSCAN). NHS Dumfries and Galloway Board are due to reconfirm this position in 2022.
[8] SCAN website, April 2020

All highly specialist non-surgical cancer care is provided to SCAN region patients in NHS Lothian, with the exception of some nationally designated services, for example allogeneic transplants are referred to NHS Greater Glasgow and Clyde.[9] Currently proton beam therapy is not provided in Scotland and patients travel to England. [10]

Highly complex systemic anti-cancer treatment (SACT), and phase 1 and 2 clinical trials are exclusively provided for SCAN by NHS Lothian through ECC.

Radiotherapy is exclusively provided for SCAN in the ECC; this includes treatments for malignant oncology and haematology. ECC also provides the national benign intracranial stereotactic service, a supra-regional LDR Prostate Brachytherapy service and Scotland's only HDR Prostate Brachytherapy service.

With the exception of Breast Surgery, surgical oncology is provided by surgical services across NHS Lothian unless there are regional and national provisions in place for selected specialties. Breast surgery sits within the existing Edinburgh Cancer Centre footprint and is in scope for this proposal; accommodation for all other surgical oncology is out of scope.

Specialist Radiotherapy services are provided for paediatric patients; their care is otherwise managed by Paediatric Oncologists and Haematologists at the Royal Hospital for Children and Young People (RHCYP) and out of scope of this project.

Specialist hospital-based Palliative and End of Life Care, and Supportive Care are provided for NHS Lothian with some referrals received from other Health Boards for specialist services.

Chimeric antigen receptor T (CAR-T) therapy is currently provided by NHS Greater Glasgow and Clyde, although the ECC has now been accredited to provide this. A national service review is currently underway which may result in the commissioning of ECC as a second provider of CAR-T therapy in Scotland. The OBC will address the emerging service needs following this review.

2.2.1.3 Regional Outreach

The ECC Consultant Team provides Oncology Outreach Services across the region which include regular face to face outpatient clinics, virtual clinics, acute oncology and cancer of unknown primary (CUP) services.

Referrals will also be received from the regional boards for Breast Surgery, specialist hospital-based Palliative and End of Life Care, and Supportive Care when specialist ECC services are required.

2.2.1.4 NHS Lothian beyond ECC

The NHS Lothian Breast service is provided over two sites, in the ECC and at SJH.

SACT, including some clinical trials, is provided for West Lothian patients at St John's Hospital in Livingston. If required patients from East or Mid Lothian will be transferred to St John's Hospital to avoid delay in treatment if capacity is an issue in Ward 1 at ECC.

Supportive therapies for haematology patients are provided in SJH, the Royal Infirmary of Edinburgh and East Lothian Community Hospital (ELCH), and for oncology patients at SJH.

---

[9] Other referrals to NHS Greater Glasgow and Clyde include oligometastatic SABR (approximately 6 patients per year), peptide-receptor radionuclide therapy, and internal mammary chain radiotherapy.

[10] Where patient numbers do not make for a sustainable specialist service in Scotland, centres in England will be used, for example: chordoma service in Birmingham; National Salivary Gland Institute at the Christie Centre in Manchester; total skin electrons in Newcastle.

2.2.1.5 ECC Facilities

The current ECC accommodation totals 21,000m^2 of the WGH estate, comprising:

- Cancer assessment unit
- Five inpatient wards
- Two day bed areas
- Two systemic anti-cancer treatment (SACT) daycase areas
- One supportive therapies day case area
- Three outpatients departments
- Radiotherapy services including 7 linear accelerators, 2 wide bore CT simulators, high dose rate brachytherapy suite
- Two theatres
- Macmillan information centre
- Supporting office accommodation
- South East Scotland Cancer Research Network

Facilities in the ECC have previously been recognised as being critically overcrowded and not meeting modern standards.[11]

2.2.2 Ongoing Capital Projects

There is currently a £23.6m capital programme underway within the Edinburgh Cancer Centre, to address immediate capacity pressures and shortfalls in accommodation.

In September 2020, the Scottish Government approved a capital Oncology Enabling Programme[12] that would address immediate service pressures for workload projected to 2025. The business case acknowledged that cancer services are not sustainable in their current configuration, and that the Oncology Enabling Programme would not provide a long-term solution. The Oncology Enabling works include internal refurbishment assessment, inpatient oncology and pharmacy accommodation, primarily for SACT, and a new build of two Linac bunker spaces.

These works are included in the blue line area mapped out in figure 11 above. Completion of this programme is due in December 2023.

Figure 13: Oncology Enabling Projects

Project Name	Service Area(s) Impacted	Stage of Project April 2022	Planned Completion Date
Oncology Enabling Programme	Daycase SACT (Ward 1)	In construction	December 2022
	Radiotherapy Cancer Admin accommodation	In construction	July 2022
	Cancer Assessment Unit Inpatient Wards 2 & 4	Detailed design	December 2023

[11] Unannounced inspection report WGH, Healthcare Environment Inspectorate, January 2015

[12] Full Business Case for the Oncology Enabling Projects, Edinburgh Cancer Centre, Western General Hospital, NHS Lothian, July 2020

All of these projects relate to the adaptation, improvement and reallocation of space within the constraints of the existing estate, with the exception of the Radiotherapy element of the Oncology Enabling Programme which is a new build.

The inpatient and cancer assessment unit works include upgrades to flooring and building fabric and improved fire safety design, however being restricted by current infrastructure significant derogations (e.g. around room sizes and facilities) are still required.

Approval for these interim measures was given on the understanding that NHS Lothian and regional partners were developing the longer term strategy of full re-provision of the Edinburgh Cancer Centre. Full re-provision is required in order to have a facility that meets modern healthcare needs and standards for the projected level of demand, whilst achieving the vision of transformed and improved cancer services and pathways for adult cancer patients from across the SCAN region.

2.2.3 Existing Service Provision

The majority of the cancer services in scope for this reprovision are provided from the ECC on the Western General Hospital site. They provide the regional specialist cancer centre for SCAN, as well as the majority of acute cancer services in Lothian.

Figure 14: Edinburgh Cancer Centre Service provision for adults and young people

Cancer Assessment, Acute Oncology and Cancer of Unknown Primary (CUP) Service	Inpatients: Oncology, Haematology, Breast Surgery, Teenage and Young Adult Unit	Outpatients Services
Breast Services (including Breast Surgery)	SACT – Inpatient and Daycase	Specialist Haematology and Stem Cell Transplants
Radiotherapy	Stereotactic Radiotherapy / Radiosurgery (including National Intracranial SRS Service)	LDR and HDR Brachytherapy
Specialist Palliative and End of Life Care	Supportive and Rehabilitative Therapies	Clinical Trials

In addition, the following additional cancer services are delivered at other NHS Lothian sites:

Figure 15: ECC Services at St John's Hospital

SACT – Daycase	Breast Services (including Breast Surgery)	Outpatient Services
Supportive and Rehabilitative Therapies	Clinical Trials	Daycase Procedures
Acute Oncology	Cancer of Unknown Primary (CUP)	

Figure 16: ECC Services at the Royal Infirmary of Edinburgh

Regional Haemophilia Comprehensive Care Centre	Regional Clinical Immunology Service	Benign Haematology Unit
Supportive and Rehabilitative Therapies	Neuro-Oncology Outpatient Services (in Clinical Neurosciences)	Paediatric Radiotherapy Outpatient Services (in RHCYP)
Hepatobiliary clinics	Specialist Palliative and End of Life Care	Participation in various multidisciplinary teams with other services

Also, apheresis is delivered from the RIE by the Scottish National Blood Transfusion Service (SNBTS).

Additional cancer services managed under the ECC and delivered on NHS Lothian sites include:

- Specialist Hospital-based Palliative and End of Life Care (P&EOLC) is provided across Lothian.
- Outpatient clinics for haematology and supportive therapies are also provided at ELCH.
- The Scottish Breast Screening Programme for South East Scotland is based at Ardmillan Terrace and has mobile units working across the region.

Although the current Edinburgh Cancer Centre delivers a significant proportion of cancer services, there are cancer diagnostics and treatments delivered across NHS Lothian that **are not managed** by the Cancer Management Team including;

- Cervical
- Colorectal
- Endoscopy
- Gastrointestinal (GI)
- Melanoma
- Plastics
- Radiology
- Thoracic Surgery
- Upper Gastrointestinal (UGI)
- Urology
- Cancers of the central nervous system
- Paediatric diagnostics and treatment

Current arrangements within the Edinburgh Cancer Centre are described below.

Issues with the current facilities have been well documented over several years in Healthcare Environment Inspectorate (HEI) reports [13] and business cases for capital funding to address immediate concerns.

Specialist care is still provided in largely the same facility and the region's most immunocompromised patient groups are accommodated in poor quality accommodation, including shared inpatient bays with multiple patients sharing toilets. Clinical risks associated with this increased sharply with the onset of the COVID-19 pandemic. Beds and treatment chairs had to be removed from clinical areas to achieve adequate physical distancing. As services remobilise and underlying demand continues to grow, the challenge of maintaining access to safe and timely cancer care, and timely inpatient transfers from

[13] Healthcare Environment Inspectorate: Inspection report WGH, 2010, and Unannounced inspection report WGH, January 2015.

other centres will become increasingly difficult. The challenges and limitations of the current facilities are described in section 2.3, Drivers for Change, following the description of the current service below.

2.2.3.1 Inpatient Ward Accommodation

In May 2022 the Edinburgh Cancer Centre inpatient ward accommodation comprises six inpatient wards, listed in figure 17 below. One of the oncology wards incorporates the Teenage Cancer Trust (TCT) Unit, which includes inpatient and daycase capacity for teenage and young adults with cancer (TYAC). Also within the ECC is the only lead-lined room dedicated to radioactive iodine (RAI) treatment in the SCAN region. Patients with thyroid cancer and other complex thyroid conditions are treated here. This is exclusively for RAI treatment.

The bed numbers contained in each of these are detailed below including the specialities to which they relate.

Figure 17: Existing Inpatient bed numbers at May 2022

Ward	Specialty	Single Rooms	Total Beds
CAU	RAI room	1	1
Ward 6	Breast	5	11
Ward 8	Haematology including SACT	19	19
Ward 3 TCT Unit	Haematology and Oncology TYAC	4	4
Ward 3	Oncology including SACT	1	7*
Ward 4	Oncology	4	4
Ward 11	Oncology	3	21*
Ward 15	Oncology	2	22
Total inpatient ward beds		**39**	**89**

**Both wards reduced by 2 beds to allow for adequate spacing due to the Covid-19 pandemic. These have been offset by opening 4 beds in Ward 4.*

The bed model from 2024 onwards, on completion of the Oncology Enabling Programme, is the baseline for the purposes of this business case. By the end of 2023 the bed model will move to:

Figure 18: Inpatient bed numbers from December 2023, excludes trolleys

Ward	Inpatient Specialty	Single Rooms	Total Beds
CAU	Haematology and Oncology	2	6
Ward 6	Breast	5	11
Ward 8	Haematology	19	19
Ward 3 TCT Unit	Haematology and Oncology TYAC	4	4
Wards 3 &4	Oncology including SACT	3	19
Ward 2	Oncology (incl. RAI room)	4	17
Ward 11	Oncology	3	21*
Total inpatient ward beds		**40**	**97**

** Two beds remain closed in this ward, it is anticipated that these will be available post-pandemic however, if this is not possibl,e it presents further significant pressure on capacity.*

This translates to 41% of *all ECC inpatient beds* in single rooms, although not all of these have en-suite bathrooms. The lowest proportion of single rooms is in *oncology*, only 27%, increasing the risk of infection for a severely immunocompromised patient group. Limited availability of single rooms to place patients who may need these for a range of reasons, such as vulnerability, treatment, or privacy and dignity in end of life care, seriously impacts on the ability to manage effective patient flow.

2.2.3.2 Unscheduled care: Cancer Assessment Unit (CAU)

The Cancer Assessment Unit (CAU) acts as the front door to the Edinburgh Cancer Centre, providing unscheduled care for adult oncology and haematology patients who have either developed acute problems while on active cancer treatment or who have recently completed therapy.

Patients for assessment are referred by colleagues across the SCAN region, or can contact the Cancer Treatment Helpline (CTH) where they are assessed using the UKONs tool. If required, patients will be referred on to Oncology for further triaging. Currently in Lothian there is a specialist acute oncology nursing service from 9am to 5pm, staff in CAU then take over from 5pm until the Hospital at Night Team (HAN) takes on the triage from 9pm-9am.

This assessment ensures that patients access the most appropriate, effective and timely care if their condition is deteriorating. Some patients are advised to attend CAU for further diagnostics or treatment, and some attending will be admitted to ECC following assessment.

In addition to the unscheduled pathways, there are currently five scheduled patient pathways going through CAU:

1) Supportive Therapies: following triage, booked in for urgent / planned treatment
2) Post procedure recovery: following triage, booked in for urgent / planned treatment
3) Admissions for gynaecology brachytherapy
4) Radioactive iodine treatments for patients with thyroid cancer / complex thyroid conditions
5) Short stay patients

Over ten years the CAU has modernised, evolved and expanded from three trolleys to the equivalent footprint, but not inpatient beds, of a ward. This is in part driven by the introduction of the Cancer Treatment Helpline and the development of the Acute Oncology Nurse Service who triage patients and offer advice and support to ensure they get the right care, in the right place and at the right time. Approximately 95% of patients that call the CTH are triaged to get a call back from the acute oncology nurse specialist, and only 50% of them are admitted to hospital. Previously, this would have been significantly higher.

At present the CAU also hosts a range of activities that arguably should not be at the front door for cancer services. These include, but are not restricted to, supportive therapies, management of central venous access devices (CVADS), and recovery from biopsies and interventional radiology procedures.

Considerable growth in brachytherapy treatment over the last two years sees approximately four patients a week admitted to CAU ahead of going to theatre.

While CAU is designed and staffed as an assessment unit, there is the ability in times of peak demand to flex some of the trolley spaces to bed spaces. This adds to the workflow going through the unit.

Figure 19: Cancer Assessment beds / spaces at May 2022

Cancer Assessment Unit* (CAU)	Single rooms	Trolley bays	Total Spaces
	4	12	16

** There are a further two spaces, not counted in the numbers above, closed to allow adequate physical distancing and segregated pathways during the COVID-19 pandemic. It is anticipated that these will be available post-pandemic however if this is not possible it presents further pressure on capacity.*

Figure 20: Cancer Assessment beds / spaces from December 2023

Cancer Assessment Unit (CAU)	Single rooms	2-bed rooms	Trolley bays	Total Spaces
No of rooms	2	2	9	
No of beds / trolleys	2	4	9	**15**

On completion of the Oncology Enabling Programme in 2023 the CAU will be in accommodation with 15 spaces designed with CAU pathways in mind.

2.2.3.3 Haematology

The Edinburgh Haematology Centre provides care for patients with both non-malignant and malignant haematological conditions which require intensive medical and nursing interventions. Treatment includes stem cell transplants, systemic anti-cancer therapies (SACT) and supportive therapies such as blood and/or platelet transfusions. The patients are highly susceptible to infection therefore the treatment of sepsis is a large part of the workload.

ECC delivers the regional autologous haematopoietic stem cell transplant service for SCAN NHS Borders, NHS Fife, NHS Highland and NHS Lothian.

In 2018, a substantial anonymous charitable donation of ~£13m was received by NHS Lothian, specifically to upgrade the Haematology service and facilities within the Western General Hospital. This work fully refurbished Ward 8 (inpatients) and also established a haematology day case unit in ward 7; both opened in September 2021. This has been hugely beneficial in improving the environment and experience for both patients and staff, however long-term reprovision for Haematology remains in scope for this proposal.

2.2.3.4 Breast Services

The ECC Breast service is provided over two sites, at the Western General and St John's hospitals.

The Edinburgh Breast Unit (EBU) is the tertiary referral centre and supports the SCAN regional services in Fife and Borders seeing ~8000 new patients per year (the majority of which are not found to have cancer), diagnosing approximately 400 new cancers annually in addition to a similar number detected through the national breast screening programme.

The Edinburgh Breast Unit offers a one-stop outpatient clinic to aid quick diagnosis and an efficient patient journey. EBU has a dedicated clinic area and the nearby Mammography Unit provides the imaging capacity.

Annually ~1,700 operations are carried out at WGH and ~200 operations carried out at SJH. A small proportion of these are revisional / reconstructive procedures but the majority are cancer operations.

Clinical facilities in the Edinburgh Breast Unit (EBU) comprise:

- Ward 6 inpatient ward, which includes a day surgery unit
- Two operating theatres
- Outpatient clinic area: nine clinic and two treatment rooms, Breast Care interview rooms
- Mammography department; three mammography rooms and three ultrasound scanning rooms

Figure 21: Inpatient Breast Unit - bed numbers

Ward 6 – Edinburgh Breast Unit	Single rooms	3-bed rooms	Trolley bays	
No of rooms	5	2	6	
No of beds	5	6	6	**17**

At SJH, there are breast outpatients' clinics in OPD 4, including a nurse-led long-term post cancer surveillance and high-risk clinic once a week. Breast imaging is carried out in the main radiology department, and breast surgery, including recovery, in the main SJH theatres.

2.2.3.5 South East Scotland Breast Screening Programme

The EBU works in partnership with the South East Scotland Breast Screening Programme based at Ardmillan Terrace, which covers Lothian, Fife, Borders and Forth Valley.

On receipt of a positive screening result patients return to their host board for treatment and follow up.

2.2.3.6 Day Treatment

The majority of systemic anti-cancer treatment, or SACT, for adult patients in NHS Lothian is planned and delivered in ECC at the Western General Hospital.

There is a satellite daycase facility delivering SACT and supportive therapies at St John's Hospital in West Lothian, and supportive therapies are also delivered in East Lothian Community Hospital for haematology patients.

Supportive therapies may be administered independently or as a package of care for patients already undergoing SACT. Like SACT, the vast majority are administered to outpatients. These therapies include IV fluids, blood and platelet transfusions, venesections, management of central venous access devices (CVADS) and magnesium infusions. To mitigate overcrowding and staffing pressures, an area was developed within CAU in 2015 to cope with the demand for supportive therapies, however, as described above the acute assessment area is not the ideal location for scheduled daycase treatment.

Consultants from the Edinburgh Cancer Centre support a decentralised regional SACT delivery service working with administrative, nursing and pharmacy colleagues in the partner boards in dedicated SACT units. In 2019, 93.5% of the SACT and supportive therapies delivered in Lothian were for Lothian domiciled patients and regional patients only attend ECC (in Edinburgh or West Lothian) where their SACT cannot be delivered locally, such as in the most complex cases.

Figure 22: Proportion of patients receiving SACT in their home board

NHS Board	Patients receiving SACT in their home Board in 2019	SACT delivery sites
Borders	80%	Borders General Hospital
Dumfries and Galloway	89%	Dumfries and Galloway Royal Infirmary Galloway Community Hospital
NHS Fife	84%	Queen Margaret Hospital

The ECC day case satellite at SJH provides a wide range of haematology and oncology SACT and cancer trials closer to home for West Lothian patients. Since this unit was expanded in 2019, the range of gynaecological, lung, acute oncology and enhanced supportive care services in West Lothian has increased by 151 treatments per month on average. However, this has not freed up equivalent capacity in ECC Ward 1, due to increased demand and limitations on chair spaces.

Figure 23: Day case procedures across the region

	ECC	St Johns	Borders	D&G	Fife
Oncology SACT	✓	✓	✓	✓	✓
Haematology SACT	✓	✓	✓	✓	✓
Breast Surgery	✓	✓	✓	✓	✓
Brachytherapy	✓	X	X	X	X
Ascitic drainage	✓	X	✓	✓	✓
Line / device insertion and care	✓	✓	✓	✓	✓
Biopsies	✓	✓	✓	✓	✓

2.2.3.7 Outpatients

A variety of haematology, oncology and breast outpatient clinics are provided for both new and return patients. These include consultant, nurse-led and pharmacist-led clinics, allied health professional (AHP) clinics, and joint multidisciplinary clinics with surgical specialties.

Outpatient appointments are conducted in separate locations across the WGH site (ECC and in the Anne Ferguson Building). Oncology clinics for lung, colorectal, urological and breast tumour groups are also held at SJH. Neuro-oncology clinics are run in the Department of Clinical Neurosciences at RIE.

Oncology clinics are provided in these regional Boards by NHS Lothian oncologists.

Figure 24: ECC Oncology outreach clinics

Oncology Outpatients Clinics by ECC staff	St Johns	Borders	D&G	Fife
Breast	✓	✓	✓	✓
Colorectal	✓	X	✓	✓
Upper GI	X	X	X	✓
Gynaecology	X	X	X	✓
Lung	✓	✓	✓	✓
Urology	✓	X	X	✓

Other Lothian sites with haematology clinics are SJH, the Lauriston site in Edinburgh, and East Lothian Community Hospital.

Haematology clinics are provided by the home health boards in NHS Borders, NHS Dumfries and Galloway and NHS Fife.

Follow-up clinics are provided virtually by consultants, specialist nurses and pharmacists by telephone or video where clinically appropriate and in line with the wishes and/or circumstances of individual patients. The necessity (and the capability) increased for this during the COVID 19 pandemic.

2.2.3.8 Radiotherapy

The ECC provides a comprehensive radiotherapy service to the South East region, and some specialist services to patients from all over Scotland including the national Benign Intracranial Stereotactic Radiotherapy Service. There is no other radiotherapy provision for the SCAN region.

The department sees 200-240 patients per day who are usually having a course of treatment which is delivered over multiple days which means that patients can attend daily for up to 7 weeks. There is an active research program and a significant provision of clinical trials through the SES CRN, though little capacity for further expansion of this within the current footprint.

The ECC is the only Scottish centre currently offering the full range of specialist treatment options for prostate cancer: robotic-assisted laparoscopic prostatectomy (RALP), stereotactic ablative radiotherapy (SABR), low dose rate (LDR) brachytherapy and high dose rate (HDR) brachytherapy.

From 2023 the clinical / technical facilities in the department will include:

- Seven linear accelerators (Linacs)
- One fallow Linac bunker to allow maintenance and swaps without impact on patient access
- One shelled Linac bunker for potential future expansion
- 2 wide-bore CT simulators
- Space for MR simulation suite
- 1 high dose rate brachytherapy suite

- Rooms for pre-treatment imaging planning, patient set-up, contouring
- clinic rooms, interview rooms
- workshops for mechanical, electrical and computing functions
- Dosimetry laboratory
- A kV unit for superficial treatments
- Secure sealed sources laboratory
- Shielded single bed area in ward 2 for radioactive iodine therapies

The current suite of seven Linac bunkers do not provide the space and flexibility to install and accommodate the full range of modern radiotherapy treatment machines, and the associated technical equipment essential for clinical operation.

In summer 2022 two additional bunkers will be completed and handed over to NHS Lothian under the Oncology Enabling Programme to provide space for the capital equipment replacement programme without impacting on patient access.

2.2.3.9 Brachytherapy

ECC provides both Low Dose Rate brachytherapy (LDR) and High Dose Rate brachytherapy (HDR) services to patients. Patients often start this planned admission from CAU and can return there post procedure for aftercare, in spite of the CAU being principally set up for unscheduled pathways.

LDR is used to treat prostate cancer patients from across Scotland, alongside NHS Greater Glasgow and Clyde. The treatment is planned and delivered in the WGH main theatres and in a Breast theatre in ECC and requires secure storage facilities for the radioactive seeds and specialist LDR treatment planning equipment and software.

ECC provides HDR treatments for gynaecological cancer patients and, in addition, is the only centre in Scotland treating prostate patients with HDR. For both cancer types, patients require access to theatre for preparation, then the patient is transferred to the radiotherapy department for a CT scan for treatment planning purposes. All HDR treatments are delivered in the HDR Brachytherapy Suite, due to the requirement for radiation shielding during treatment. The treatment room also provides appropriate secure storage to comply with regulations regarding high activity radiation sources and counter-terrorism legislation. Specialist HDR treatment planning equipment and software is required.

2.2.3.10 Molecular Radiotherapy

Molecular radiotherapy (MRT), sometimes referred to as radionuclide therapy procedures, are carried out by nuclear medicine physics teams in collaboration with local oncology and radiotherapy teams. Treatments include outpatient radioiodine therapy (131I) for thyroid conditions, prostate cancer therapy using 223Ra and inpatient radioiodine ablation therapy (131I) for thyroid cancer. The service supports the provision of a radioactive glomerular filtration rate (GFR) as a measure of kidney function for accurate chemotherapy dosing and 90Y SIR Spheres for treatment of liver tumours based at RIE.

The outpatient service sees 50 patients/year for 223Ra who are having a 6-course treatment regime delivered over several weeks and 100 patients/year for 131I. These and other outpatient MRT are delivered in a separate building to ECC at the WGH.

The inpatient MRT service is delivered within the ECC, currently in the Cancer Assessment Unit. It is the only lead-lined room dedicated to radioactive iodine (RAI) treatments in the SCAN region. The service treats 50 patients/year with thyroid cancer and other complex thyroid conditions, who have a minimum inpatient stay in isolation of 3 days. On completion of RAI treatment in isolation, patients are scanned elsewhere on the WGH site before they can be discharged.

2.2.3.11 Clinical Trials

The ECC is committed to improving quality, learning and innovation through the Scottish Cancer Research Network South East (SCRNSE), established in ECC in 2004. Clinical Trials programmes in

Oncology and Haematology provide access to novel and innovative therapies that are not available to patients through any other route.

The network supports cancer clinicians to deliver clinical trials across all tumour types. The majority of participants receive their treatment in the ECC, however there is a commitment to extending access across the region, and delivering trials closer to home where possible.

Core funding is from the Chief Scientist's Office (CSO) with trial-specific funding from Research & Development, Cancer Research UK (CRUK), the Experimental Cancer Medicines Centre (ECMC), and commercial income. Providing funded trials can lead to significant cost savings for the NHS, both in the cost of treatment and in the training and development of staff to deliver new and emerging therapies and treatment.

Despite the disruption of the Covid-19 pandemic felt by all aspects of the service, the SCRNSE trials programme continues to expand, with 35 new trials in 2019 up 46% to 51 new trials in 2021. There were 141 trials underway in 2019, and in January 2022 this number is up 83% to 258 (133 trials open and 125 in follow-up). While 1063 patients in the region consented to take part in a clinical study, either as part of a randomised trial or by donating blood or tissue for further research purposes, there was a 33% increase (1410) in 2021. From 2018 – 2020 the number of NHS Research Scotland (NRS) fellowships and research funded clinicians tripled. This is in contrast with a trend of decline seen elsewhere in Scotland and the UK and consequently. The opportunities for professional development and research have enabled ECC to continue to recruit and retain NHS consultants during a time of national workforce shortages.

Oncology and haematology patients on clinical trials receive their SACT in day case chairs in ECC wards 1 and 7, and there are also trials in radiotherapy. There are no inpatient beds designated for clinical trials. SCRNSE management and data managers are in the Inverleith Building. Research nurses are based in Ward 1 while research therapeutic radiography and physics staff are based in Radiotherapy. There is currently no accommodation for radiotherapy research staff.

Pharmaceutical expertise is key to the management of many clinical trials, and the pharmacy team work in close collaboration with the multidisciplinary team. Investigational medicines are stored and dispensed between the main WGH pharmacy and satellite pharmacy in Ward 1.

2.2.3.12 Pharmacy

Pharmacy (aseptic and oral dispensing units and clinical verification area) for the delivery of SACT and supportive therapies, and also for inpatients in the Oncology and Haematology wards, and as required for outpatients attending Oncology clinics, the Breast Unit and Haematology clinics.

Aseptic/satellite pharmacy expansion is critical for the sustainability of ECC in the short to medium term, and this delivered in Ward 1, alongside the oncology and clinical trials SACT areas, under the Oncology Enabling Programme. These works will result in a slightly improved pharmacy environment but it remains sub-optimal in terms of space required.

2.2.3.13 Patient residency accommodation

Until the COVID-19 pandemic, residential accommodation was available in ECC for patients who required to stay close to the hospital for their treatment but did not need to be admitted for inpatient care. Arrangements are now made for these patients to stay in hotel or rental accommodation in Edinburgh, funded by their home Board. Unlike in the hospital accommodation, a partner or carer can stay in this accommodation as support for the patient.

This is most commonly required for patients who would otherwise have to travel frequently, even daily, for courses of SACT and / or radiotherapy treatment. The higher level of inpatient bed use by patients from Dumfries and Galloway is attributed in part to the distance of travel for their specialist treatment.

2.2.4 Existing Workforce

The number of staff directly involved in delivering cancer services are detailed below:

Figure 25: Staff numbers within Cancer Services

Staff Group	Funded establishment, including vacancies	Comments
Consultant Clinical Oncologists	26.3 WTE	Delivering Radiotherapy and SACT
Consultant Medical Oncologists	19 WTE	Delivering SACT, Acute Oncology and CUP Services
Oncology Specialist Drs	3 WTE	Based at ECC and SJH
Oncologists are based in the Edinburgh Cancer Centre with 12 travelling to peripheral clinics (in Fife, Borders and Dumfries and Galloway) to support locally delivered clinics, multi-disciplinary meetings, and SACT delivery close to patients homes.		
Consultant Haematologists	14.5 WTE	
Haematology Specialist Drs	2.5 WTE	
Consultant Immunologists	0.8 WTE	
Consultant Breast Surgeons	10.9 WTE	
Breast Specialty Drs	2.4 WTE	
Consultants in Palliative Medicine	3.9 WTE	Across Lothian Acute Hospitals
Palliative Care Clinical Nurse Specialists	8.4 WTE	
Registered Nurses (Band 5/6/7)	184.7 WTE	
Non-Registered Nurses (Clinical Support Workers, Band 2/3)	62 WTE	
Clinical Nurse Specialists (CNS) and Advanced Nurse Practitioners (ANP)	55.7 WTE	
Oncology Physics (Band 5/6/7/8/9) Registered Clinical Scientists Clinical Technologists	 16.6 WTE 23.5 WTE	Includes brachytherapy, Stereotactic Radiosurgery, Clinical Trials
Registered Therapeutic Radiographers (Band 5/6/7/8)	68.8 WTE	
Non-registered therapeutic radiography staff (Band 2/3)	4.6 WTE	Radiography/Radiotherapy Helpers

Pharmacists (B6-8)	26.0 WTE	Resource allocated to Cancer Services
Pharmacy Technicians (B4-7)	15.5 WTE	
Pharmacy Support workers (B2-3)	7.3 WTE	
Pharmacy Admin (B2-4)	1.0 WTE	
Research Nurses	25.8 WTE	Clinical Trials
Tissue Consenters	2.0 WTE	
Data Managers	24.0 WTE	
Clinical Trials Pharmacists	3 WTE	
Administrative Services (based on WGH site)	106.4 WTE	Includes Cancer Performance Team, Ward Clerks, Clerical Officers, Medical Secretaries, Multi-Disciplinary Meeting Co-ordinators and managers
There is an additional 7 WTE admin staff that support Cancer Services based at St John's Hospital.		
Other AHP groups: physiotherapy, occupational therapy, speech and language therapy, dietetics		
Facilities management: catering, domestics, logistics, portering, security		

2.2.5 Existing Estate Assets

2.2.5.1 Scope of the Existing Estate

The following areas of Estate at the Western General Hospital are relevant to this Initial Agreement:

- The Edinburgh Cancer Centre (ECC) Zone – current ECC accommodation
- The former Department of Clinical Neurosciences (DCN), relocated to Little France in 2019 – DCN Zone – proposed site identified for ECC

These zones are noted in the below site plan (figure 26).

Figure 26: WGH Block Plan

2.2.5.2 Property and Asset Management Strategy

The development of the Edinburgh Cancer Centre for South East Scotland has been identified as top priority for NHS Lothian's capital programme, based on the needs for change set out in this proposal.

This strategic priority has been consistently stated within the Board's Property and Asset Management Strategy (PAMS) submissions to Scottish Government in accordance with CEL 35 (2010). The NHS Lothian PAMS has been informed by a wide range of estate asset management data (EAMS) obtained from asset appraisals including a rolling programme of site-based building conditions surveys, and desktop reviews. The output of these surveys has clarified the property asset condition and performance of the above zones; including the physical condition, functionality, structural integrity, space utilisation, categorised quality and statutory compliance. Although recent improvements to the asset condition and performance have been recorded, in the main the ECC Zone is classified as 'not satisfactory' or 'very unsatisfactory' conditions. The classification of the DCN Zone is similar, although this is largely, but not entirely, unoccupied.

2.2.5.3 Backlog Maintenance

In addition to the wider EAMS data, Backlog maintenance and life cycle data has been reviewed for the ECC and DCN zones as a part of this Initial Agreement.

Based on a review of the specific blocks within the above zones, the tables below confirm the relevant current backlog maintenance obligations for the areas. These are base elemental costs and do not reflect the real costs of projects required to deliver the backlog reduction. It is generally accepted that a three times multiplier should be used to determine a more realistic cost for the relevant backlog removal.

The backlog maintenance obligations for the ECC and DCN zones include:

- Electrical
- Fire Prevention
- Internal and external repairs - HAI related works in particular, such as fabric, water and ventilation

It should also be noted that the costs also include a relative proportion of the identified costs for external site areas including key infrastructure.

Backlog costs indicated for the DCN zone have been provided for information below but are not included in the costing of this Initial Agreement. Costs for the decant of the remaining occupants in this area, and demolition of the DCN zone (as the preferred ECC site) is subject to a separate Initial Agreement. The resulting reduction in BLM is offset against the costs of that business case.

Figure 27: ECC Backlog Maintenance

	Currently Recorded Backlog Maintenance (£m)				
	Low	**Moderate**	**Significant**	**High**	**Total**
ECC Zone Totals	£0.095	£0.831	£2.590	£ 0.004	£3.520

Figure 28: DCN Backlog Maintenance

	Currently Recorded Backlog Maintenance (£m)				
	Low	**Moderate**	**Significant**	**High**	**Total**
DCN Zone Totals	£1.20	£0.762	£2.619	£ -	£4.581

Should the ECC reprovision be approved to proceed then there will be significant adjustment to the backlog maintenance obligations for the WGH site.

2.3 Drivers for Change

2.3.1 Cancer and Related Strategic Drivers

National, regional and NHS Lothian strategic drivers for change in the provision of regional cancer services and the ECC facilities are listed below.

A digest of these strategies and their fit with this proposal is included in the appendices.

Figure 29: Strategic Drivers for Change

Owner	Strategy
NHS Lothian	NHS Lothian Corporate Objectives for 2022-23
NHS Lothian	NHS Lothian Quality Strategy 2018 – 2023
NHS Lothian	Sustainable Development Framework and Action Plan 2021
Scottish Government	A Fairer, Healthier Scotland: 2017-2022
Scottish Government	Framework for Effective Cancer Management, 2018, and updated in 2021
Scottish Government	Chief Medical Officer for Scotland Annual Report 2020-2021 on Build Back Fairer 2020
Scottish Government	The Modern Outpatient 2017-2020
Scottish Government	Beating Cancer, Ambition and Action 2016 Beating Cancer, Ambition and Action 2016 (Updated, 2020)
Scottish Government	Recovery and Redesign: Cancer Services – Action plan, December 2020
NHS Lothian	Better Cancer Outcomes in Lothian 2015-2020
Scottish Government	Realistic Medicine 2015/16 Realising Realistic Medicine 2016/17 Personalising Realistic Medicine 2017/18
Scottish Government	Scottish Government Economic Strategy 2015
NHS Scotland	NHS Scotland Staff Governance Standard 2012
NHS Lothian	Living and Dying Well in Lothian – Palliative and End of Life Care Strategy 2010-2015
Scottish Government	2020 Vision for Health and Social Care, 2011
NHS Scotland	Quality Strategy, 2010

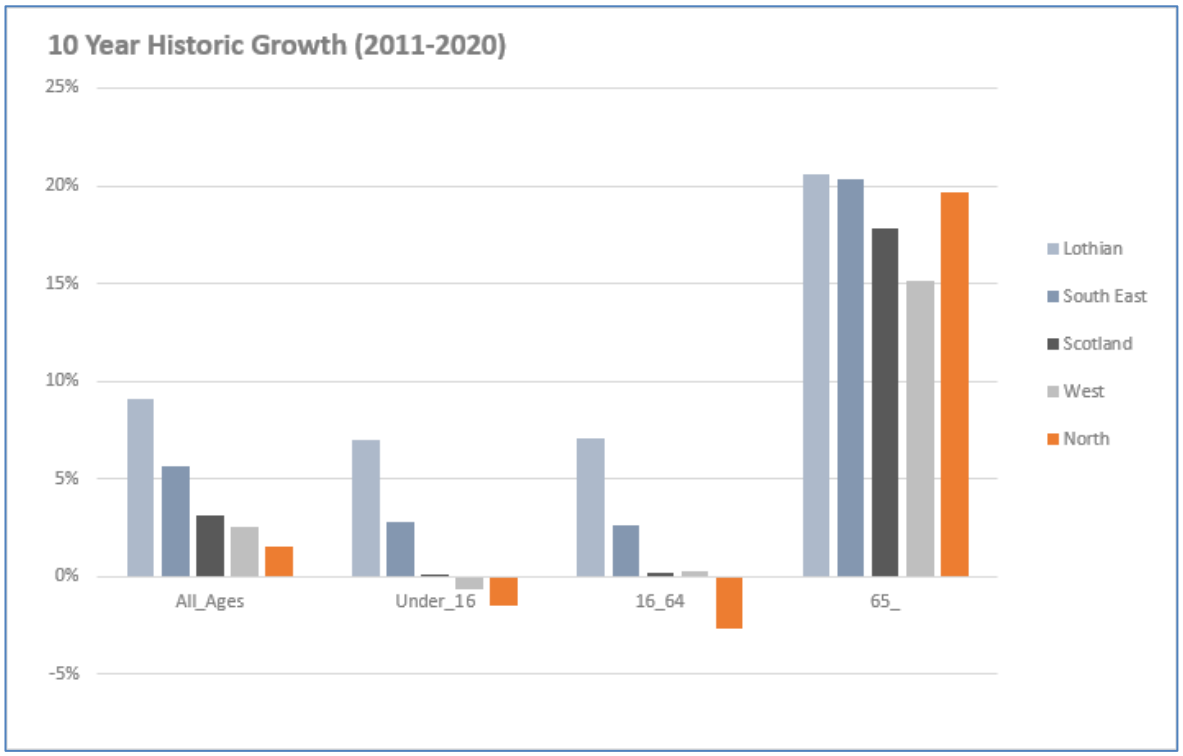
2.3.2 Population and Cancer Incidence Data

Demand has been rising annually in response to a number of key drivers. It is too early to project whether these estimates will be impacted by the COVID-19 pandemic, however in the longer term it is anticipated that the underlying trends will continue:

- Increasing population within Lothian (9% between 2011-2020) and the SCAN region (6% between 2011-2020) with growth expected to increase by a further 15% (Lothian) and 7% (SCAN) in the next 25 years;
- Aging demographic;
- Earlier detection of cancer through improved diagnostics and increased screening;
- Figure 36 shows Cancer Incidence rates from 1992-2020, with the rate falling slightly between 2014-2017 and again in 2019-20. This second decline in incidence is due to the impact of Covid-19 on the identification and recording of cancer, and not thought to be an actual decline in cancer incidence;
- Projections from ISD show a predicted increase of 33% across the SCAN region between 2010-2025;
- Increased number of effective treatment options licensed and SMC approved;
- Increased duration of use of multiple regimes of SACT in individual patients as a result of better efficacy and greater tolerability of modern SACT agents;
- Improved Radiotherapy modalities and techniques – increased indications for Radiotherapy;
- Increased use of lifelong Supportive Therapies

- Many more people are living with and beyond cancer, this successful outcome adds substantially to the complexity of care planning and provision if these patients require further treatment in future.
- The population of Scotland, the SCAN region and Lothian has increased since 2010 with older age groups seeing the greatest increase.

Figure 30: Population growth in different parts of Scotland[14]



The graph above and table below demonstrate that Lothian's historic growth rate is the highest in Scotland across all age bands displayed.

Figure 31: 10 Year Historic Growth 2011-2020[15]

	All ages	Under 16	16-64	65+
Lothian	**9%**	**7%**	**7%**	**21%**
South East	6%	3%	3%	20%
Scotland	3%	0%	0%	18%
West	3%	-1%	0%	15%
North	2%	-2%	-3%	20%

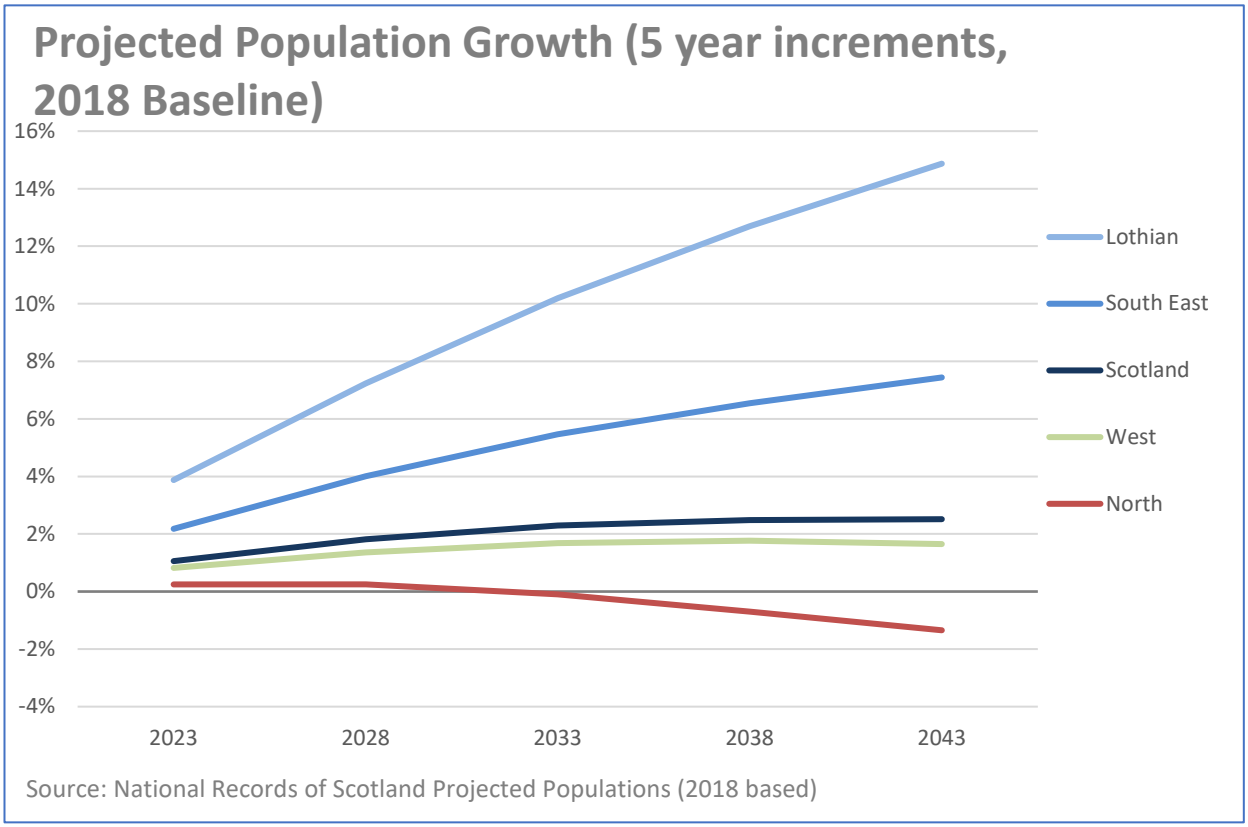
[14] National Records of Scotland (NRS)

[15] National Records of Scotland (NRS)

This trend is forecast to continue, with the population of Scotland, the SCAN region and Lothian predicted to increase over the next 25 years. Lothian has the largest predicted increase for all of Scotland (see Figure 32, 33 and 34 below).

Older age groups are predicted to see the largest increase with Lothian having the largest increase across all age ranges.

Figure 32: Forecast population growth in Scotland[16]



- The East region is expected to grow over four times faster than any other region in the next 25 years.
- The Lothian growth rate is projected to be 12% higher than the Scottish average over the same period.
- Lothian is expected to show the highest rate of growth in the over 65s age group over the same period.

Figure 33: Projected population change over 25 years (2018-2043) [17]

	2023	2028	2033	2038	2043
Lothian	**4%**	**7%**	**10%**	**13%**	**15%**
South East	2%	4%	5%	7%	7%
Scotland	1%	2%	2%	2%	3%
West	1%	1%	2%	2%	2%

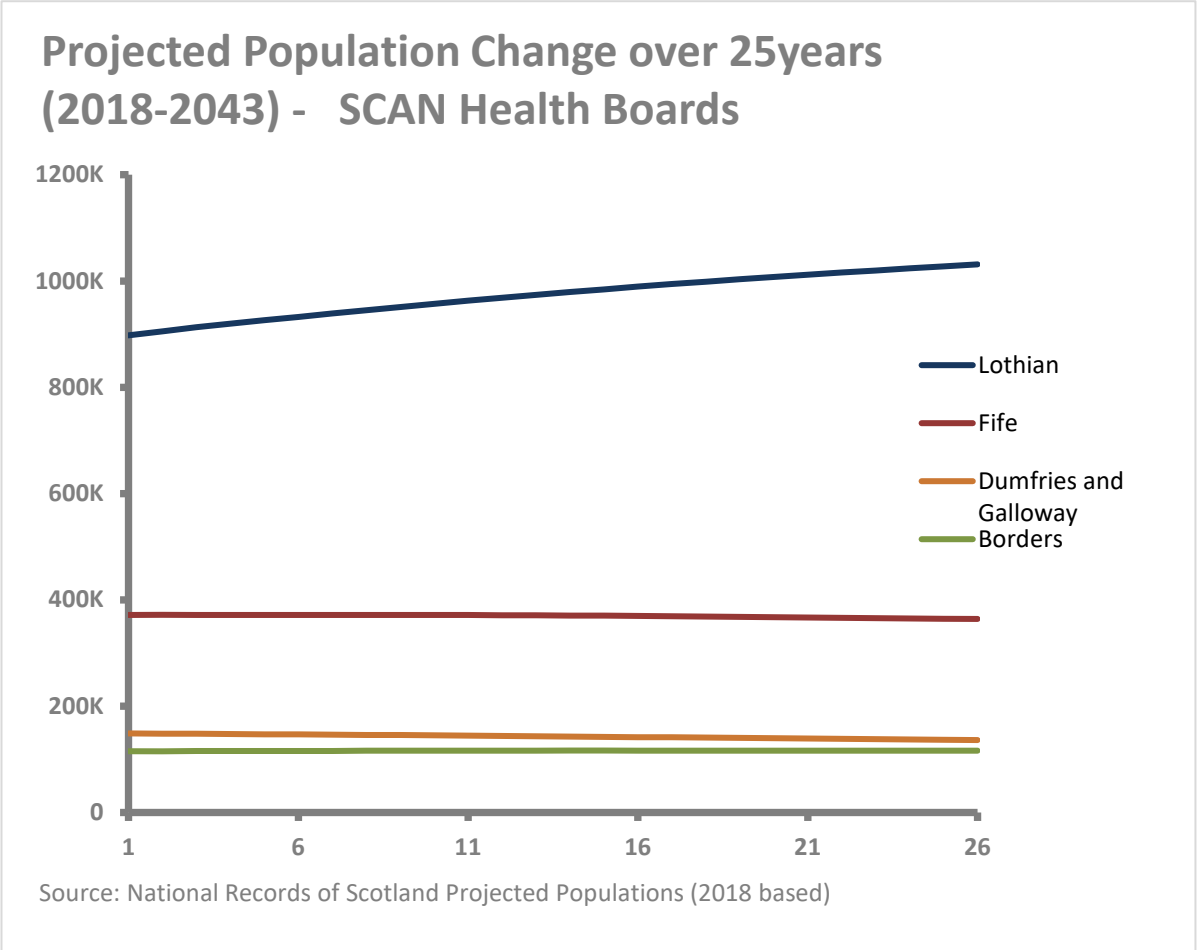
[16] National Records of Scotland (NRS)
[17] National Records of Scotland (NRS)

North	0%	0%	0%	-1%	-1%

Figure 34: Predicted population over 25 years (2018-2043)[18]

	2018	2023	2028	2033	2038	2043
Lothian	**897,770**	**932,555**	**962,745**	**989,285**	**1,011,757**	**1,031,266**
South East	1,533,740	1,567,172	1,595,185	1,617,532	1,634,137	1,647,854
Scotland	5,438,100	5,495,578	5,537,116	5,562,901	5,573,181	5,574,819
West	2,509,920	2,530,536	2,544,012	2,552,234	2,554,280	2,551,302
North	1,394,440	1,397,870	1,397,919	1,393,135	1,384,764	1,375,663

Figure 35: Projected population change over 25 years (SCAN Region)



[18] National Records of Scotland (NRS)

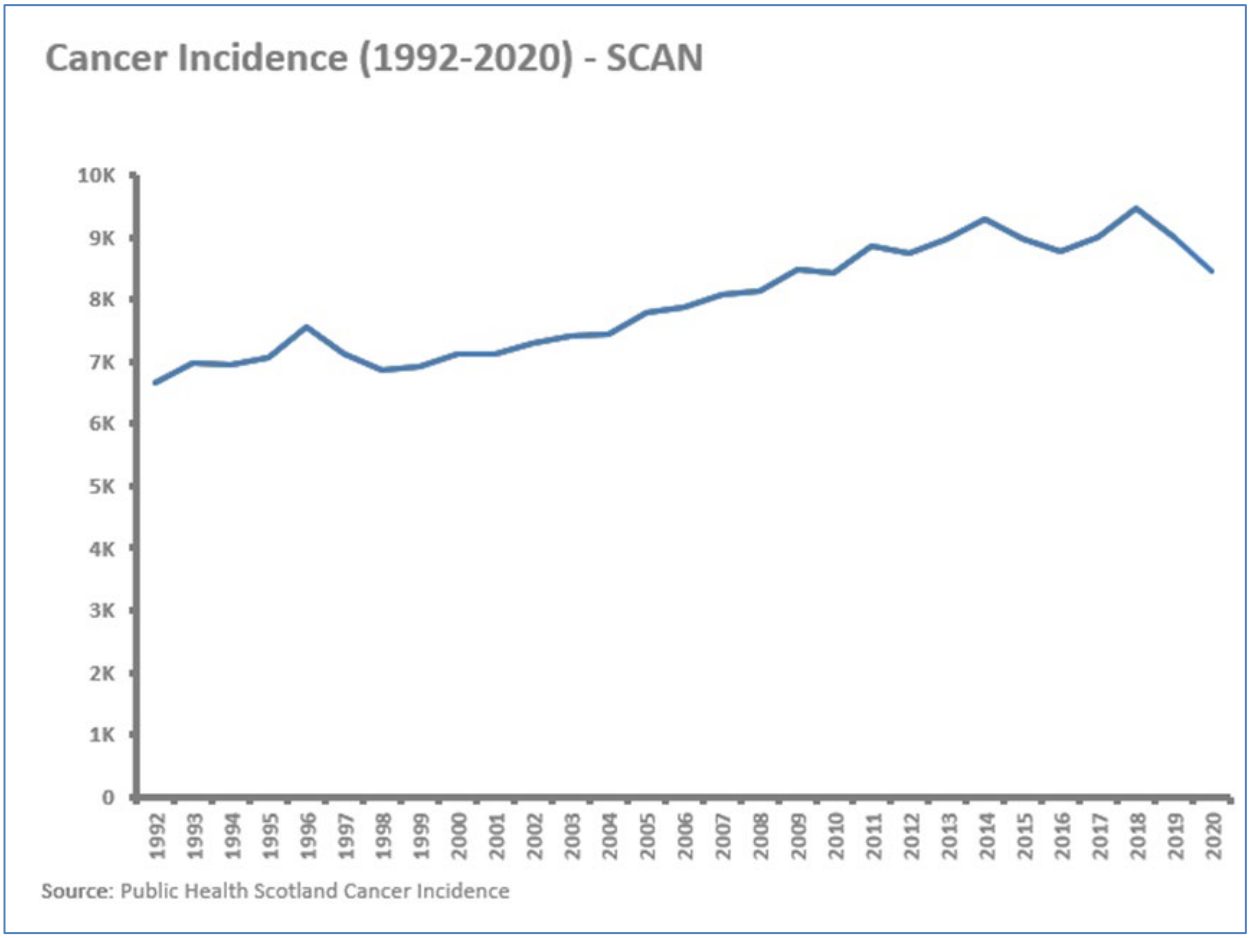
2.3.2.1 Increasing Cancer Incidence

Age standardised cancer incidence in Lothian, South East Scotland and in Scotland overall is significantly higher than the UK average[19]. The most common cancers in the South East region are prostate, lung, colorectal and breast cancers.

The demand for services (e.g. Oncology outpatients) has been looked at over a significant period (e.g. 10 years from 2009-2019) to allow any anomalies to be standardised. It is also important to note that although the graphs show that physical attendances have decreased in some areas (Haematology, for example) this does not reflect a decrease in activity but rather a change in how the activity is delivered (e.g. virtually or in other locations).

The graph below shows the increase in cancer incidence (across all cancers) in the SCAN region from 1992 to 2020. The apparent decline recorded in 2019 and 2020 is not thought to be indicative of the actual demand, and is linked to the impact of the Covid-19 pandemic on assessment, diagnosis and recording.

Figure 36: Cancer Incidence (SCAN Region)[20]



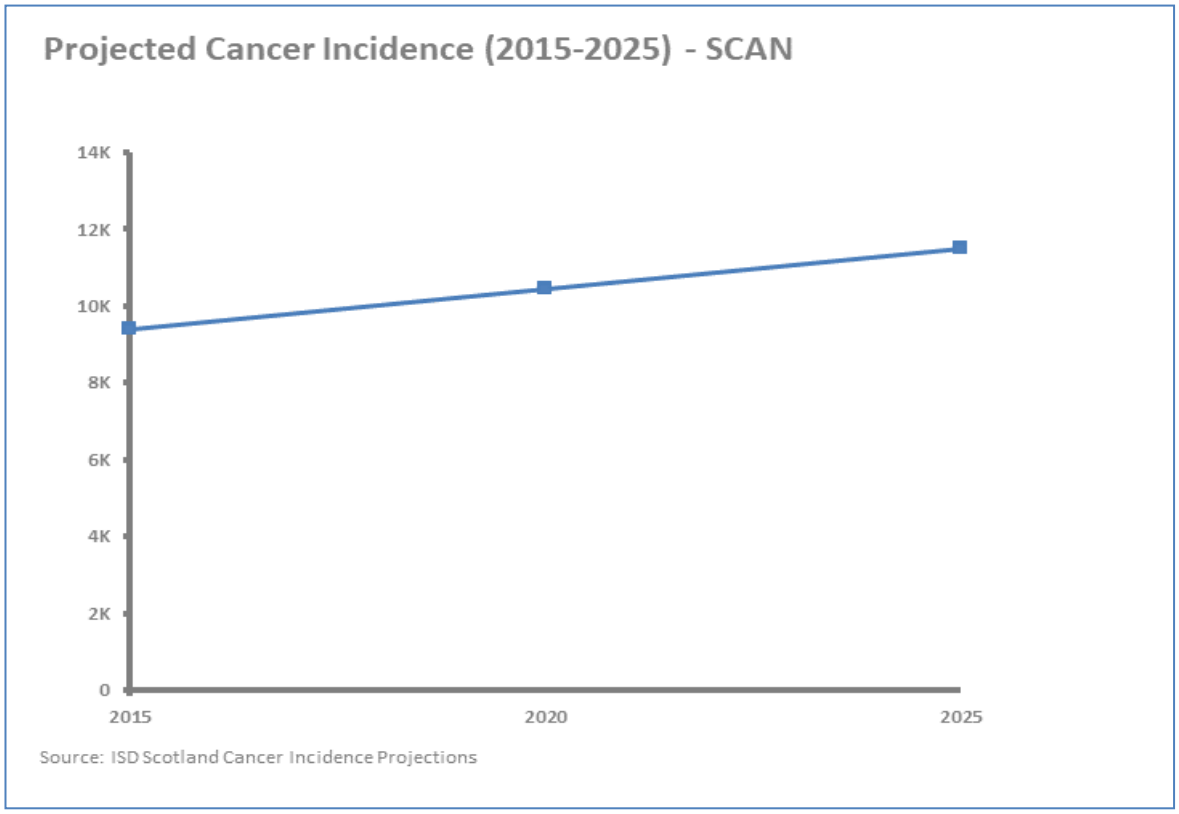
Future projections for Cancer incidence were last forecast by ISD in 2014. Figure 36 shows Cancer Incidence rates from 1992-2020, with the rate falling slightly between 2014-2017 however projections from ISD in 2014 showed a predicted increase of 33% between 2010-2025.

[19] Better Cancer Outcomes in Lothian – A Strategy for Cancer 2015-2020, November 2014

[20] Public Health Scotland (PHS). Note: Cancer registration is a dynamic process: the data presented here may differ from other published data relating to the same time period.

Cancer Incidence in the SCAN region was projected to grow by 22% - from 9,391 in 2015 to 11,479 by 2025 (per 100,000 population).

Figure 37: Projected Cancer Incidence (SCAN Region)[21]



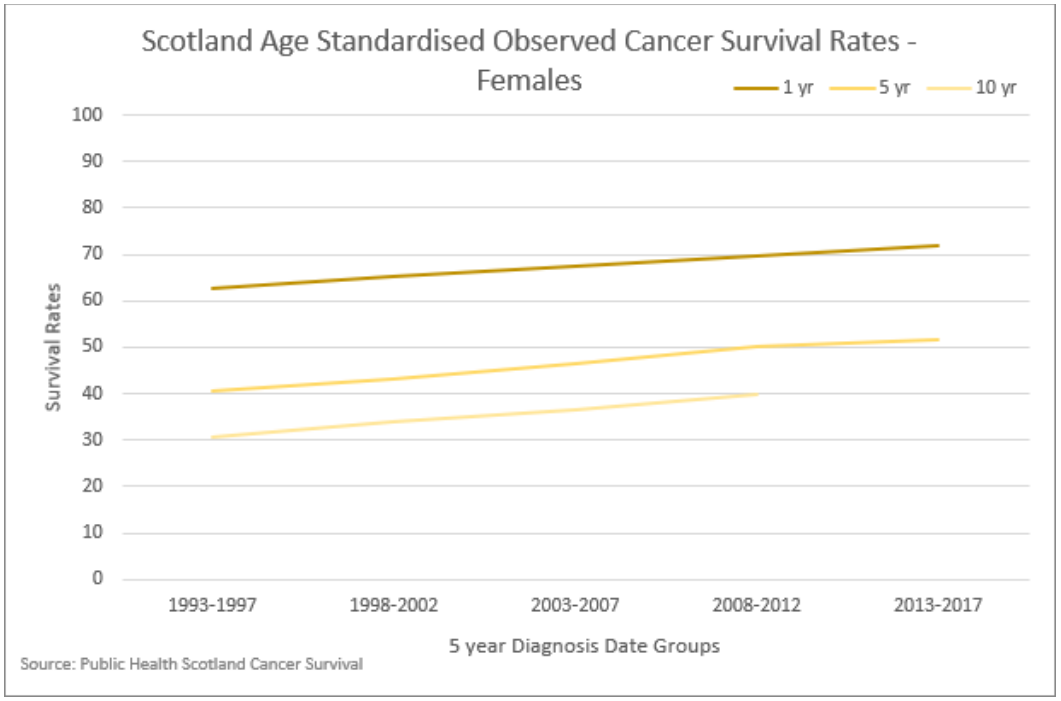
The projected population growth combined with an ageing population contributes to a projected increase in cancer incidence in the SCAN region, and highlights the need for delivery of a sustainable service to meet the needs of cancer patients in South East Scotland.

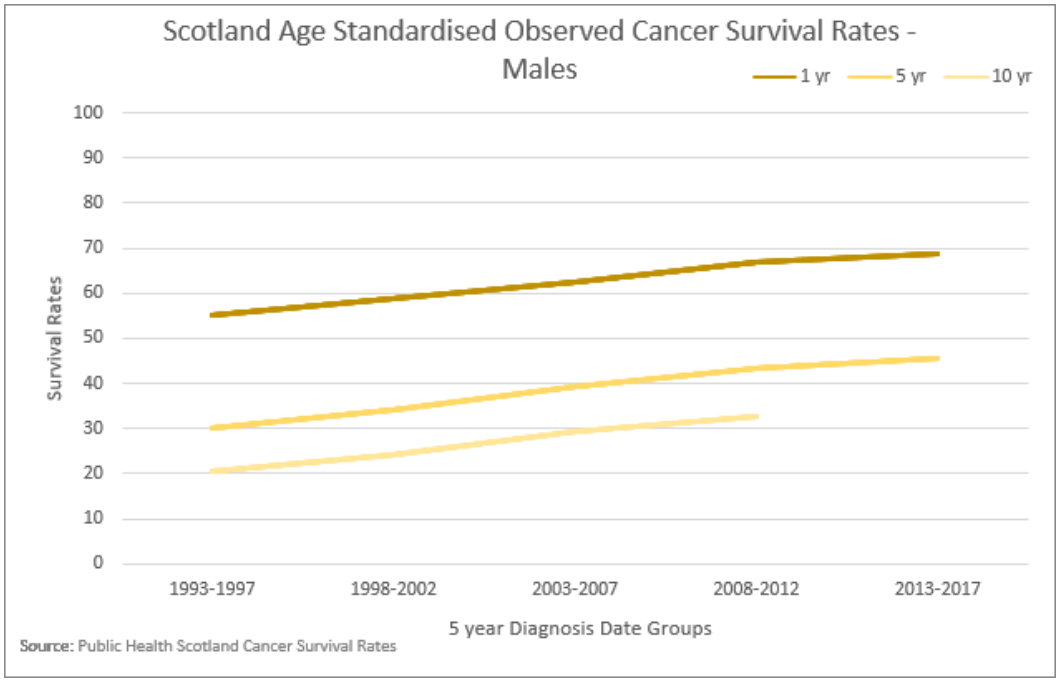
2.3.2.2 Cancer Survival Rates

As demonstrated in the graphs below, across all age groups, in Scotland, the relative five-year survival rate has increased.

[21] Public Health Scotland (PHS)

Figure 38: Age Standardised Relative Cancer Survival Rates in female and male patients [22]





The actual percentage increase is highest in the 65-74 age group and it is also the largest cohort of patients accounting for 25-30% of admissions and Length of Stay (LOS) currently.

The fact that more people are living with and beyond cancer, highlights the need for a service that supports a growing number of cancer patients for a longer time.

[22] Public Health Scotland (PHS)

2.3.3 Challenges with Current Arrangements

Service development and transformation work across the region has been, and continues to be, undertaken to counteract the rising demand for cancer services and pressure on the ECC.

Challenges have been recognised through approval of earlier business cases for capital investment within NHS Lothian, including the Haematology project (£13m), Oncology Enabling Programme of works (£23.6m) and Clinical Trials Project (£1m) and expansion of the St Johns Hospital Satellite Unit (£160k).

Notwithstanding these investments and the ongoing transformation work within cancer services, NHS Lothian and its partner Boards continue to face challenges with regards to meeting Scottish Government targets for Cancer Performance, including Cancer Recovery targets following the pandemic.

62-day cancer pathways are measured from GP referral to treatment across a number of different tumour groups. The contribution of the ECC to these pathways include the haematological, oncological and radiotherapy treatment elements, and surgery in breast cancer.

Figure 39: Key Performance Indicators (KPIs)

Cancer Waiting Times KPIs	Target	Performance January to March 2022			
		NHS Borders	NHS D&G	NHS Fife	NHS Lothian
31-day target from the date of decision to treat until the date of first treatment, including all patients diagnosed with cancer regardless of the route of referral.	**95%**	100%	97.9%	98.4%	96.3%
62-day target from urgent referral with suspicion of cancer into secondary care until the date of first treatment.	**95%**	96.7%	77.3%	77.9%	78.8%

In 2019, NHS Lothian performance against these KPIs was 95% for the 31 day target and 78% for 62 days. This was before Covid-19 and is the year used for the baseline in activity modelling later in this proposal.

Against the backdrop of increasing population and cancer incidence these targets will become ever more challenging to meet in the future. Specific challenges across cancer pathways are described below as 'Drivers for Change', with a number of themes highlighted.

Addressing these challenges will improve compliance with the National Cancer Waiting Times Standards as outlined above, alongside other key performance metrics, whilst improving patient experience and outcomes.

2.3.4 Drivers for Change – Inpatients

The ECC wards for oncology patients are **non-compliant by Health Environment Inspectorate (HEI) standards** with concerns about **infection control, bed spacing and overcrowding.**

Healthcare Environment Inspectorate report on an unannounced inspection at WGH, January 2015

We noted in wards 2 [and] 4 … that the clinical wash hand basins were not easily accessible because of bed spacing. On each of these wards, we discussed these issues with the nurse in charge and requested risk assessments to demonstrate the controls in place to minimise the risk to patients, staff and visitors. We also saw on wards 2 and 4 that the space between the ends of each patient bed was restricted. We saw one example on ward 4 where a patient was being moved on their bed which was touching the end of other patient beds.

Governance and requirement compliance – Priority 1

To assess the layout of the beds and the accessibility of clinical wash hand basins in wards 2 [and] 4 so that staff and patients have easy access to hand wash facilities.

A cramped environment also impacts on **patient privacy and dignity**, and can **increase the risk of falls**.

Figure 40: Inpatient ward corridor

Figure 41: Inpatient wards: One toilet for 3 inpatients

Figure 42: Inpatient wards: One small shower for 3 patients

Every effort has been made to improve the environment, with regards to bed spacing and numbers per room, within the restrictions of the Oncology Enabling Programme, however, not all guidelines are met and there will still be derogations from compliance after completion of works next year. There is **a small increase in Oncology bed numbers from 70 pre pandemic to 78 post enabling, with an increase in single rooms for oncology from 16 to 21 (23% to 27% of total bed numbers).**

Haematology inpatients moved back into the upgraded ward 8, with 100% single en-suite rooms (from 66% previously), in 2021, however, this ward also **does not meet modern healthcare environmental standards, and there is no scope for growth in bed numbers** in this location. [23]

The service modelling as part of the Oncology Enabling Programme Full Business Case[24] projected that the ECC would then cope with growing demand until 2025/26; this has been further validated by the refreshed service modelling work for this reiteration of the business case. In approving the business case for this programme, NHS Lothian and Scottish Government acknowledged that this was a short- to medium-term measure to address non-compliance and pressures in the current ECC while the case for full reprovision was developed. Even with extensive capital improvements, it is clear that both capital reprovision and ongoing service transformation work are crucial to mitigate against the **growing demand for cancer services**.

Innovative medicines such as Advanced Therapy Medicinal Products (ATMPs), including cell and gene therapies, will become an increasingly important treatment option for patients with cancer.

Some patients require their SACT treatment as an inpatient, resulting in SACT trained nurses and pharmacy provision being required to work across multiple separate service areas across the ECC. In an already stretched workforce, this is a **driver for efficiency in staff pathways and departmental adjacencies**.

There is also currently no inpatient provision for cancer trials which **limits the trials that can be offered to patients in the South East region, causing a negative impact on patient outcomes**.

2.3.4.1 Admissions and Length of Stay

Reflecting rising cancer incidence and increasing range and complexity of treatments, admissions to haematology and oncology in ECC have increased by 44% from 2009-2019. In the same period, there has been a 7.8% decrease in occupied bed days, reflecting transformation of service delivery to accommodate this significant demand. The average length of stay dropped by 36% from 7.5 days in 2009 to 4.8 days in 2019.

Figure 43: ECC admissions for haematology and oncology, 2009 and 2019

	Admissions (patients)	Total occupied bed days	Mean length of stay
2009	4657	34,868	7.5 days
2019	6746	32,152	4.8 days
	+44%	-7.8%	-36%

Decreased length of stay is the result of a range of developments that allow patients to be cared for closer to, or even at, home. Better tolerated modern SACT treatment, improved outpatient support, triage, inpatient care, supportive and palliative services mean patients can be discharged from the specialist centre to their local acute hospital or to home more quickly.

Conversely, while incidence of Breast Cancer is expected to increase by 27% from 2008/12 to 2023/27[25], admissions for Breast Surgery have decreased by 46% from 2009-2019 and total occupied bed days by 35%. This reflects a significant change in practice over this time, for example, the majority

[23] In the approval of the Haematology project it was recognised that the upgrades would improve the environment for patients whilst awaiting the development of a new cancer centre. The charitable donor was aware of the limitations of wards 7 and 8 and provided the funding in full understanding of a future move.
[24] Full Business Case for the Oncology Enabling Projects, Edinburgh Cancer Centre, Western General Hospital, NHS Lothian, July 2020
[25] Public Health Scotland (PHS), where 2008/12 was the actual 5 year incidence and 2023/27 is the forecasted 5 year incidence.

of wide excision cases being done as daycase (previously an overnight stay) and earlier discharge of mastectomy patients. The increased mean length of stay reflects the complexity of the remaining inpatient admissions.

Figure 44: ECC Admissions for breast surgery, 2009 and 2019

	Admissions (patients)	Total occupied bed days	Mean length of stay
2009	1211	2827	2.3 days
2019	655	1841	2.8 days
	-46%	-35%	+22%

These trends demonstrate significant service transformation in response to a range of drivers to date. There is the potential, and the appetite, to continue transformation to improve patient experience and outcomes, however this will also require support for providing compliant facilities with sufficient capacity for the level of service demand.

Opportunities for further transformation that reprovision of the ECC offers are summarised in section 2.4.3.

2.3.5 Drivers for Change - Cancer Assessment Unit (CAU)

The critical constraint in the existing unit is **increasing demand and a lack of physical space to provide the capacity required.**

The Oncology Enabling Programme will create an 'acute' CAU in 2023, however this project also requires derogations and though a significant improvement on the current arrangement, **will not meet modern healthcare requirements or guidance**.

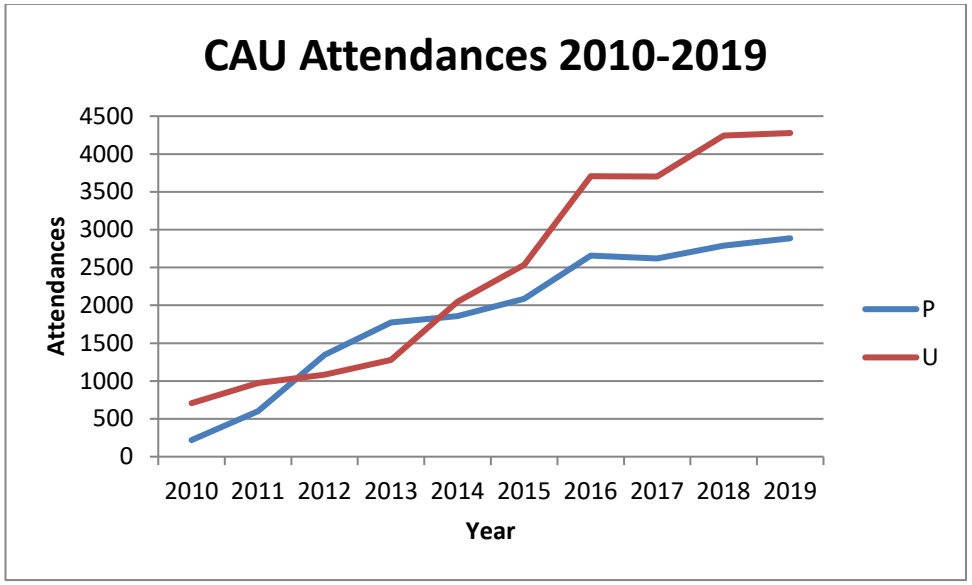
Transformation of this service to provide more effective triage, outpatient management and prevention of admission strategies would also help to manage the demand for inpatient facilities.

2.3.5.1 CAU Attendances

The graph below shows number of planned (P) and unplanned (U) attendances to CAU from 2010-2019. This shows a marked increase over the time period.[26] In the context of increasing cancer incidence and therefore increasing patient activity, **the need for acute oncology is expanding**.

[26] TRAK Data 2020

Figure 45: CAU attendances 2010-2019



In addition, the current CAU also hosts a range of **scheduled activities in an unscheduled care unit**. These include supportive therapies, management of central venous access devices (CVADS), and recovery from biopsies, brachytherapy and interventional radiology procedures. This additional workflow was necessitated by space constraints within Ward 1 and redirected to CAU from 2015-16 onwards.

2.3.6 Drivers for Change - Breast Services

The current daycase area is not fit for purpose, it is **overcrowded with no room for expansion,** and does not separate pre-operative, post-operative and discharge areas. Breast Cancer incidence in the SCAN region has increased significantly, and is expected to rise by 27% from 2008/12 to 2023/27[27]. **Shortages in breast radiographers** make meeting the rising demand increasingly challenging, and **space and equipment capacity for expansion is limited** in the current facility.

Meeting this demand in the current accommodation will require ongoing service transformation, and while optimum efficiency is the aim, the result is likely to be **delays in access (waiting times)** and potentially a **decrease in quality and patient experience.**

Figure 46: Breast Cancer Incidence 2008/12 to 2023/27

2008/12	2023/27	% Increase
6,266	7,968	27.15%

NHS Lothian are exploring the co-location of the South East Scotland Breast Screening Programme with mammography in the ECC in order to maximise efficiencies of equipment and the limited workforce to use it. The relocation of the service based at Ardmillan Terrace is included in the Initial Agreement, acknowledging that full scoping of how this can appropriately be incorporated into the ECC will be undertaken for OBC.

[27] Public Health Scotland (PHS), where 2008/12 was the actual 5 year incidence and 2023/27 is the forecasted 5 year incidence.

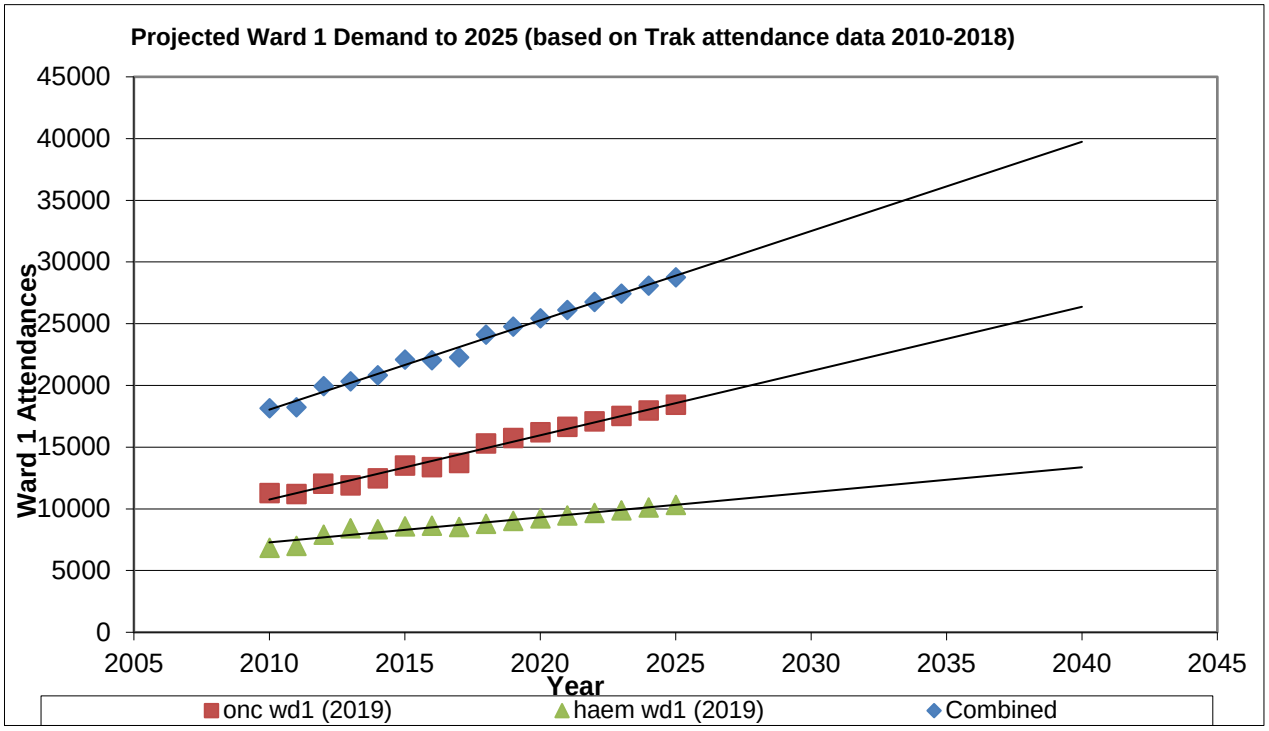
2.3.7 Drivers for Change – Daycase

2.3.7.1 SACT

Patient experience and outcomes have improved significantly with an **increase in the availability of SACT that is better tolerated** and does not require an inpatient stay. The growth in regimens, coupled with the **rise in cancer incidence**, saw day case SACT in ECC grow 32% from 2010 to 2018.

Modelling shows SACT service demand is projected to increase by a further 20% by 2027, with the impact of this trend continuing to 2040 projected in figure 47 below.

Figure 47: Forecast rise in demand for Ward 1 SACT to 2025 and beyond[28]



The description of the existing day case service in section 2.2.3.6 notes that the majority of patients already receive their SACT and supportive therapies in their home region.

Figure 48: Ward 1 activity by Health Board/origin

SACT and Supportive Therapies in 2019	Borders	Fife	Lothian	Others	Total
Chair Time (hours)	539	1,568	46,153	1,102	49,361
Chair Time (days)	67	196	5,769	138	6,170
Percentage share of activity by Board	**1.09%**	**3.18%**	**93.50%**	**2.23%**	**100.00%**

As all Boards strive to provide **care closer to home,** analysis of day case activity in ECC chairs by tumour type and regimen is used to inform opportunities for developing further services in the SACT delivery sites across the region.

[28] TRAK Data March 2019 – data to 2025 is a projection, from 2025-2040 is a linear trend line

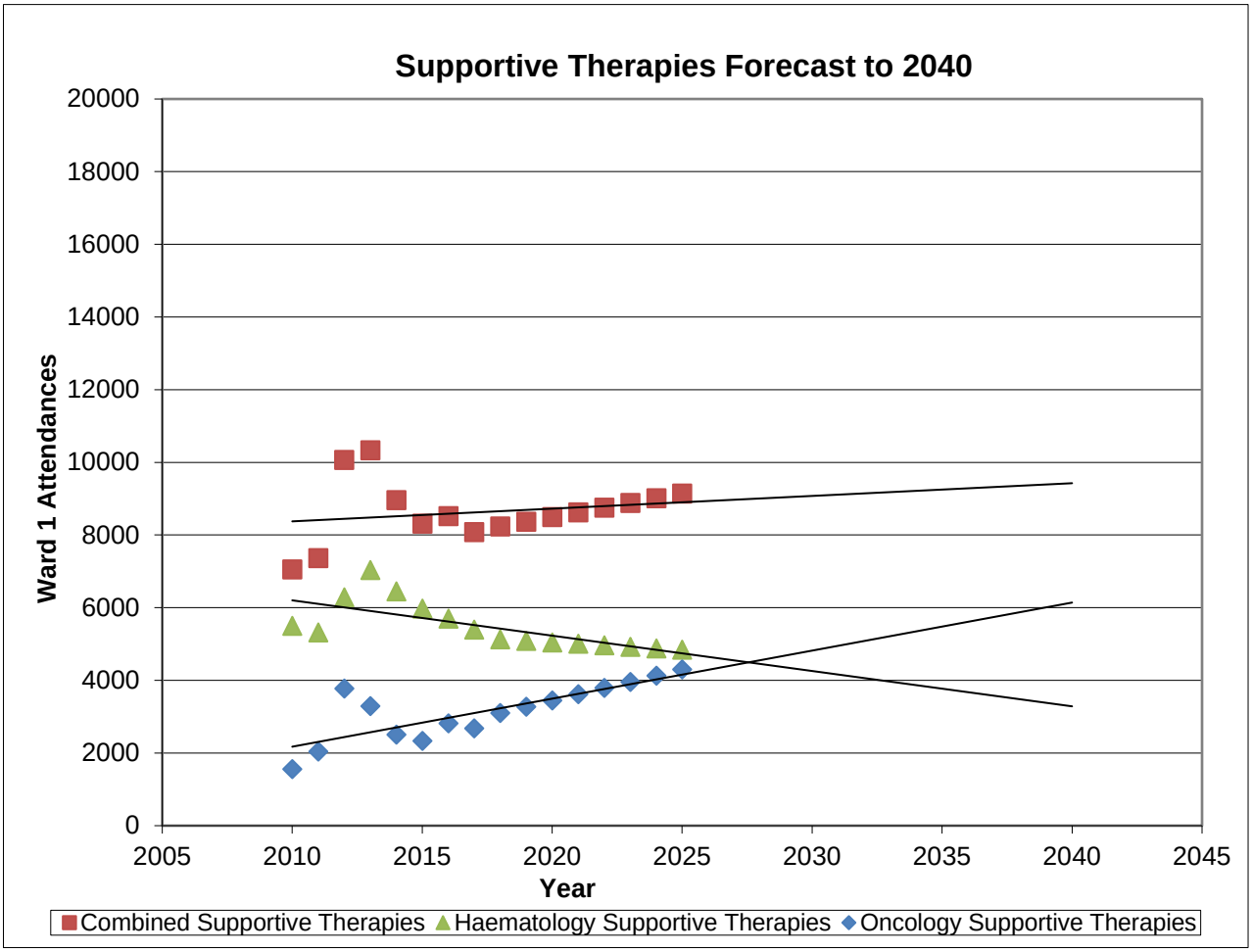
2.3.7.2 Supportive therapies

Supportive therapies are described under section 2.2.3.6 Day treatment above. These are delivered in various departments across the WGH campus, some sharing space with SACT, inpatient or unscheduled care. Some patients receive their supportive therapies in a suboptimal environment, alongside patients receiving active treatment. A consequence of these mixed pathways in multiple locations is an **inefficient use of staff and planning of treatments**.

Figure 49 shows the volume of supportive therapies delivered historically in Ward 1 - a combined increase of 17% since 2010. The graph does not reflect the entire volume of supportive therapies delivered; the decrease in 2015 is due to the change in service model when many of the therapies moved to CAU; the corresponding increase in CAU activity can be seen in figure 45 above.

Continued growth is expected with a further 11% growth projected to 2025.

Figure 49: Supportive Therapies Forecast to 2040[29]



2.3.7.3 Daycase facilities and staffing

Increased demand over a long period required additional treatment chairs in Ward 1 oncology SACT and clinical trials area, which was already a **crowded environment. Chair spacing does not meet current guidelines for the safe administration of SACT** (currently there can be as little as 2.0m^2/chair against the recommended 10m^2 chair [30]). The area also does not have isolation facilities for immuno-

[29] TRAK attendance data 2010-2018'
[30] Health Building Note 02-01 Cancer Treatment Facilities

compromised patients. All of the above have significant **implications for safety, quality and efficiency of care**.

There is **no space for patients to have a companion to support them during treatments**, and this was the case before Covid physical distancing was introduced. This is clearly detrimental to patient experience and wellbeing.

Long and complex daycase regimens limit patient flow through the department. **Limited space, particularly for pharmacy, can impact on treatment scheduling and delivery**, with delays to treatment starting, waits within the unit for treatment delivery, and patient experience being adversely affected. Due to advances in medicine patients now receive much more complex treatments and are on treatment for longer periods of time, **requiring longer and more frequent appointments in day case areas**.

Figure 50: Daycase SACT areas are cramped for patients, staff and the storage of equipment

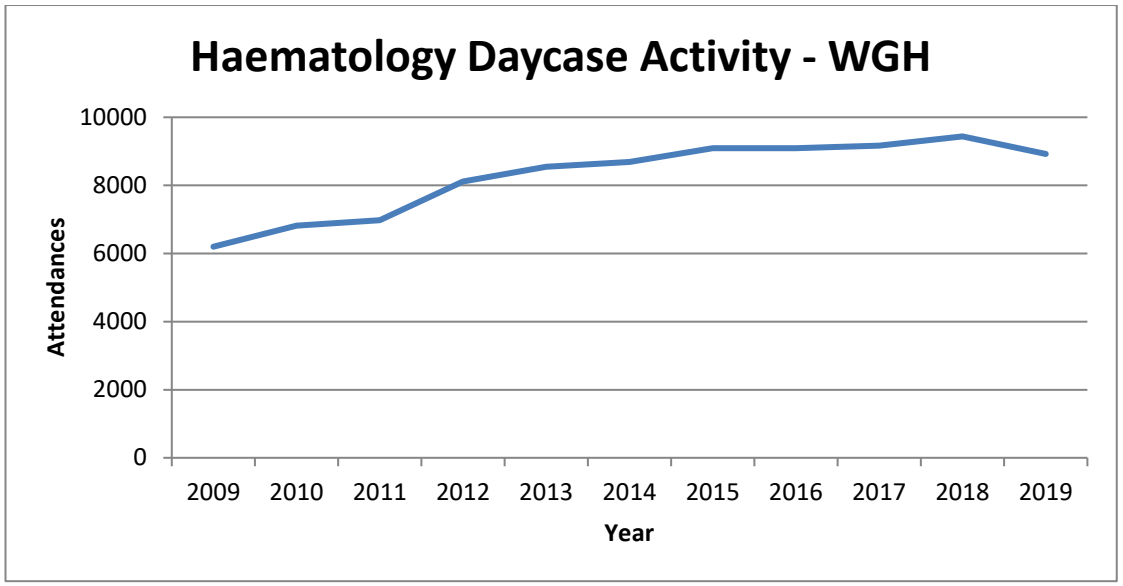
No additional chair capacity can be added to Ward 1. There is simply no further ability to expand the footprint, and **workforce pressures** preclude extending the working day.

Establishing Ward 7 significantly improved the environment for haematology daycase patients, with 8m^2 / chair and more capacity to deliver some treatments traditionally delivered in the inpatient setting. However, the location of ward 7 in ECC presents challenges and **staff inefficiencies in terms of separation from relevant services,** such as oncology SACT, pharmacy and cancer clinical trials teams.

There has been a significant annual increase in demand for the Haematology daycase service since 2009, with a 44% increase from 2009-2019 demonstrated in figure 51. It is important to note that although physical attendances may have decreased, this does not reflect a decrease in activity but rather a change in how the activity is delivered (e.g. virtually or in other locations).

At present, Ward 7 has capacity for expansion in haematology day cases with the ongoing conversion of inpatient to day case treatments as well as the rising cancer incidence. However, once at capacity there will be **no further room for increase**.

Figure 51: Haematology day case activity[31]



While the Haematology refurbishment allowed for haematology SACT and supportive therapies to be relocated to a better spaced environment in Ward 7, and released some space in Ward 1 treatment areas, addressing the critical pharmacy pressure has meant that Ward 1 still falls far short of the minimum chair spacing standard.

2.3.8 Drivers for Change - Outpatients

At WGH oncology and haematology outpatient clinics are conducted in both the Edinburgh Cancer Centre and Anne Ferguson Building, leading to **inefficiencies in working practices** for the medical, nursing and administrative teams and **confusion for patients** who are unsure of which area they should be attending.

Outpatient **attendances have increased** over the ten years to 2019: 25% in oncology, 28% in breast services, and 52% in haematology. This is, in part, due to increased success in treatment and patients living longer and requiring ongoing review.

The demand for services has been looked at over ten years from 2009-2019 to allow any anomalies to be standardised. It is also important to note that although the graphs in figures 52-54 show that physical attendances have decreased in some areas this does not reflect a decrease in activity but rather a change in how the activity is delivered.

[31] TRAK Data, June 2020

Figure 52: Expected attendances (new and review) for Clinical/ Medical Oncology [32]

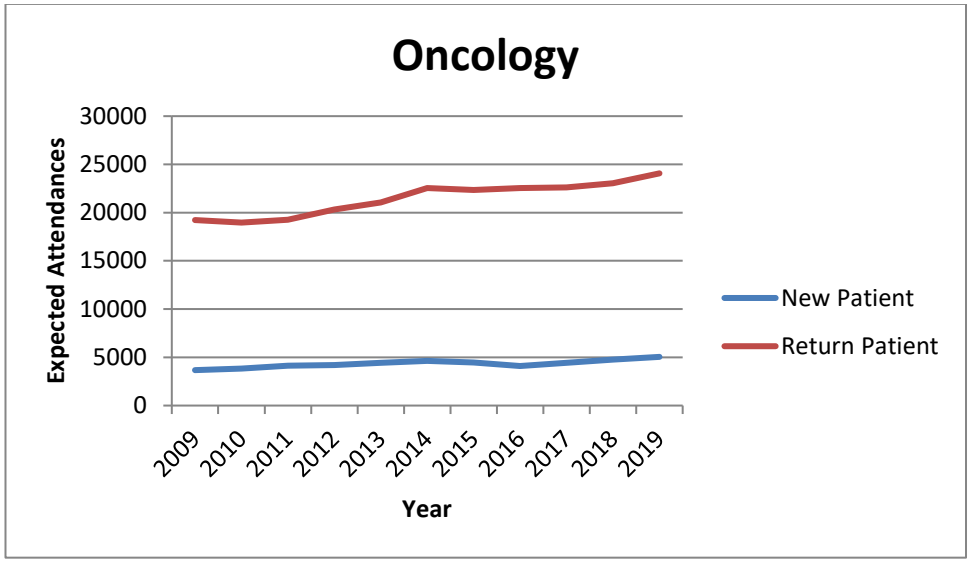
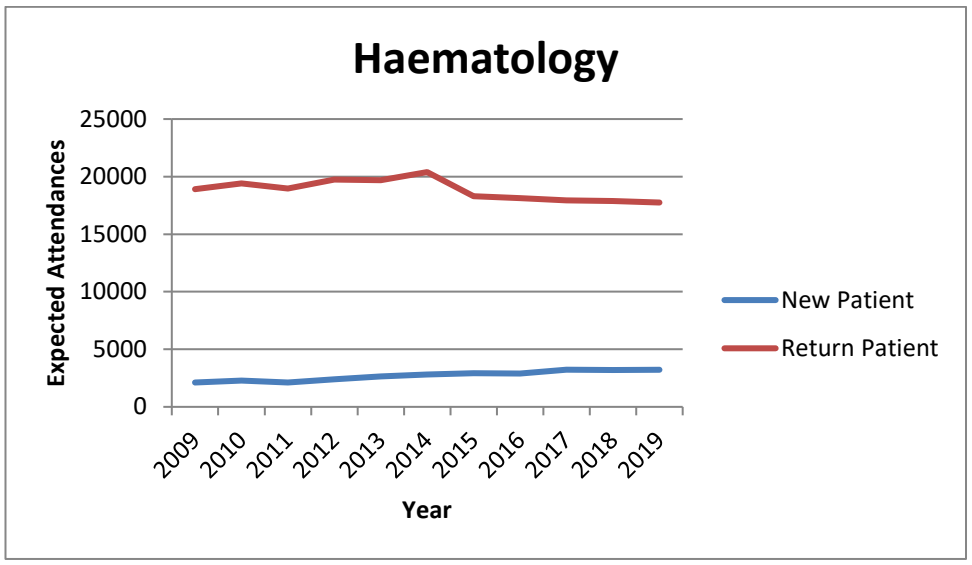
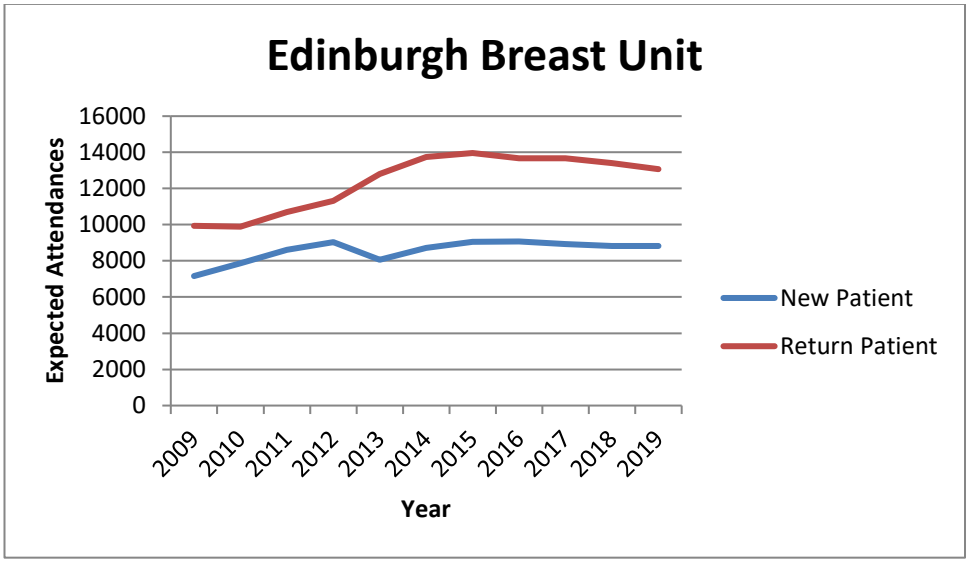


Figure 53: Expected attendances (new and Review) Haematology [33]



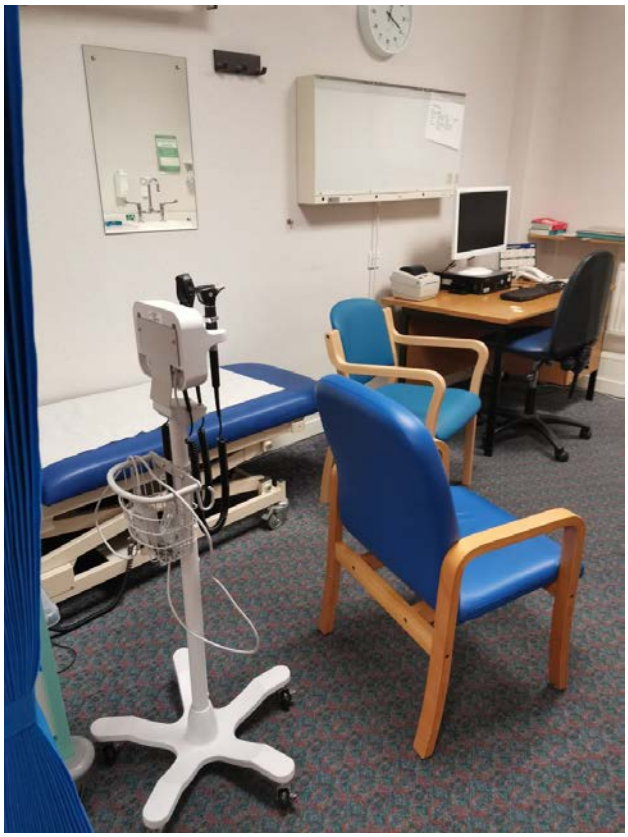
[32] TRAK Data, extracted June 2020 for 2009-2019
[33] TRAK Data, extracted June 2020 for 2009-2019

Figure 54: Expected attendances (new and Review) Breast



The haematology graph at figure 53 shows a decrease of 13% for return patients attending the ECC from 2014 to 2016; this follows a change in practice in 2015 whereby return patients began to be seen virtually, reducing the need for them to attend in person.

Figure 55: Outpatient consulting room



A programme of outpatient modernisation across NHS Lothian will be rolled out in cancer services in 2022/23. Many of the aspects for potential redesign have already been adopted, however, ongoing review of clinic templates, technology and processes is good practice for continuing to deliver the best quality of service. The full future outpatient service model will be developed for outline business case.

NHS Near Me and remote consultation are used across the region, with the shift towards follow-up clinics being delivered remotely being accelerated by the pandemic. Staff and patient confidence in, and acceptance of, these platforms grew, along with expansion of technical infrastructure and capacity.

Remote appointments will never suit all patients all of the time. Appropriate follow-up will continue to be delivered remotely where it has been proven that a safe and effective service can be delivered and where recurring resource can be committed. Remote appointments will never suit all patients all of the time.

With outpatient demand across medical oncology, clinical oncology and haematology projected to further increase by 26% for new patients, converting to an increase of a further 7% in return patients by 2032, reprovision of facilities to allow improved efficiencies and transformed service delivery will be essential to manage the demand, and to improve patient experience and outcomes.

Cancer services will continue to run multidisciplinary clinics where this will improve the patient experience and limit repeat attendances. Developments since 2019 have included the introduction of pharmacist-led review clinics for prostate cancer and breast cancer patients. The team held workshops in early 2022 to identify what can be done to maximise the non-medical prescriber workforce and will look to develop these roles across the cancer centre.

As an example of the increase in outreach specialist clinics from ECC, the following are proposed to develop with the availability of expertise and funding:

Figure 56: Potential for expanded ECC outpatients outreach, additional services in green

		Oncology outpatients						
	Breast	Colorectal	GI	Gynae	Head & Neck	Lung	Prostate	Urology
St Johns	✓	✓	X	✓	✓	✓	✓	X
Borders	✓	X	X	X	X	✓	✓	X
Fife	✓	✓	✓	✓	X	✓	✓	✓
D&G	✓	✓	X	X	X	✓	X	X

2.3.9 Drivers for Change – Radiotherapy

The current **Linac bunkers do not provide the space and flexibility to run the full range of modern radiotherapy treatment machines**, and the associated technical equipment essential for clinical operation. Two additional Linac bunkers are being built under the Oncology Enabling Business Programme. This will provide space for an additional Linac should service expansion be approved in future, and allows for replacement of the existing fleet without in-room swaps and downtime / disruption to service.

Figures 57 and 58 show some Linac bunkers are too small to allow full range of movement of the Linac couch and are overcrowded with equipment.

Previous modelling projected that eight Linacs working at 81% capacity would be required in 2025. However, this will be impacted by **changes to numbers of fractions per course and complexity of delivery in each fraction**.

Continuing to develop the prostate Stereotactic Body Radiotherapy Treatment (SBRT) service could further relieve the pressures on Linac capacity due to the reduction in treatment fractions (from 20 to 5). Each fraction takes longer, therefore the total time required on the treatment machine may not change, but the total duration of the treatment course is reduced with huge benefit to patients. For this treatment to be considered routine, the results of the UK PACE Study (comparing surgery, conventional radiotherapy and stereotactic radiotherapy for localised prostate cancer) need to be published. It is anticipated that this will be within the next 1-2 years and in the interim period prostate SBRT remains available through existing clinical trials.

Refreshing the model will incorporate changes in practice, complexity of treatment and the impact of new screening programmes (particularly for Breast, Prostate and Lung which are our largest patient groups).

Figure 57: Radiotherapy – Linac bunker

Figure 58: Radiotherapy - Linac bunker

Figure 59: Radiotherapy – limited storage

Figure 60: Radiotherapy – corridor

2.3.10 Drivers for Change - Brachytherapy

2.3.10.1 Low Dose Rate (LDR) Brachytherapy

Waiting times for prostate low dose radiation (LDR) brachytherapy having been 5-6 months consistently for a number of years, a situation worsened by the COVID-19 pandemic. Unlike most other large UK Cancer Centres, the ECC does not have dedicated brachytherapy theatre time, and capacity is limited by access to theatres and theatre / anaesthetic staffing. Dedicated theatre time would significantly impact positively on cancer **waiting times for patients** in the SCAN region's second largest tumour group, and provide an opportunity to channel more patients into the brachytherapy route, in turn **alleviating pressure on surgical services**. The treatment alternative is Robotic Assisted Radical Prostatectomy (RARP) which also has a waiting time of around 6 months.

2.3.10.1 High Dose Rate (HDR) Brachytherapy

HDR brachytherapy patients have applicators and/or needles inserted in theatres and are then transferred with those applicators and/or needles in situ to the HDR brachytherapy suite. The dedicated HDR suite is essential for security, storage and application of the high activity radioactive source. The lack of co-location presents **a significant risk to patients when being transferred** with the applicators and/or needles in situ, which could become dislodged.

Expansion of the prostate HDR service would allow greater personalisation of radiation treatment by providing capacity for:

- all patients who might benefit from a boost (in combination with external beam radiotherapy) which has been proven in randomised clinical trials to reduce the likelihood of local recurrence;
- the option of an HDR boost for selected patients, which would mean fewer external beam fractions, thereby releasing some Linac capacity;
- HDR use as a salvage treatment for previously irradiated patients presenting with local recurrence.

Figure 61: Brachytherapy preparation room

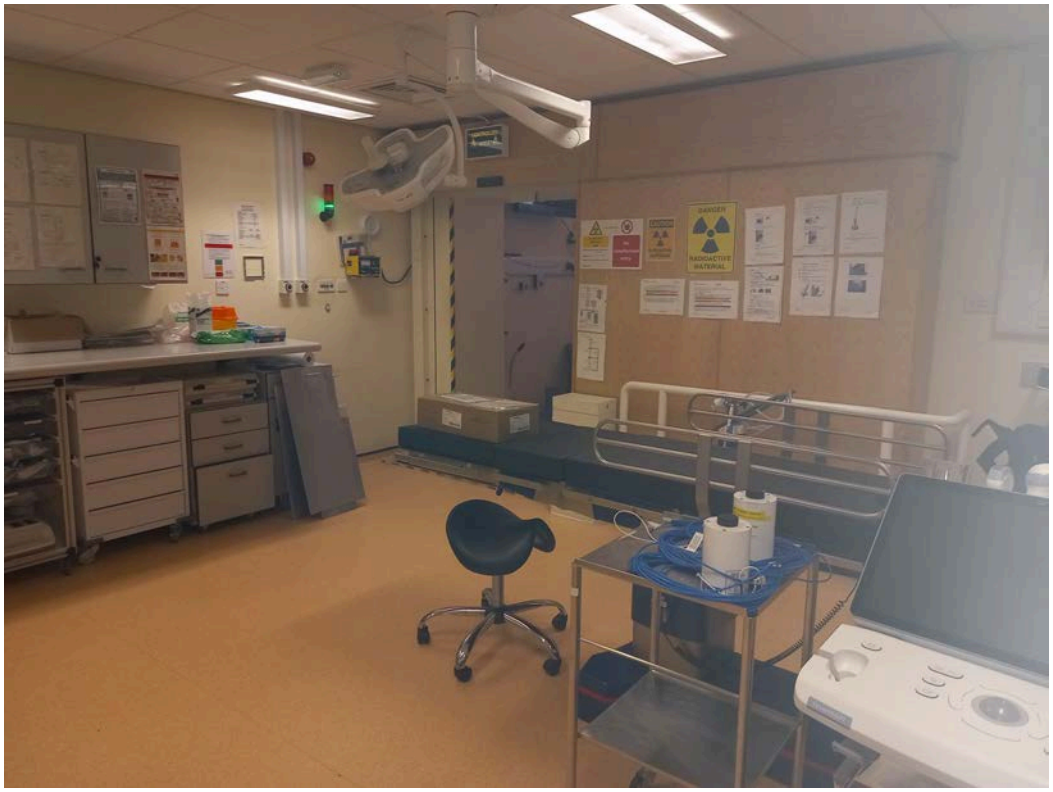
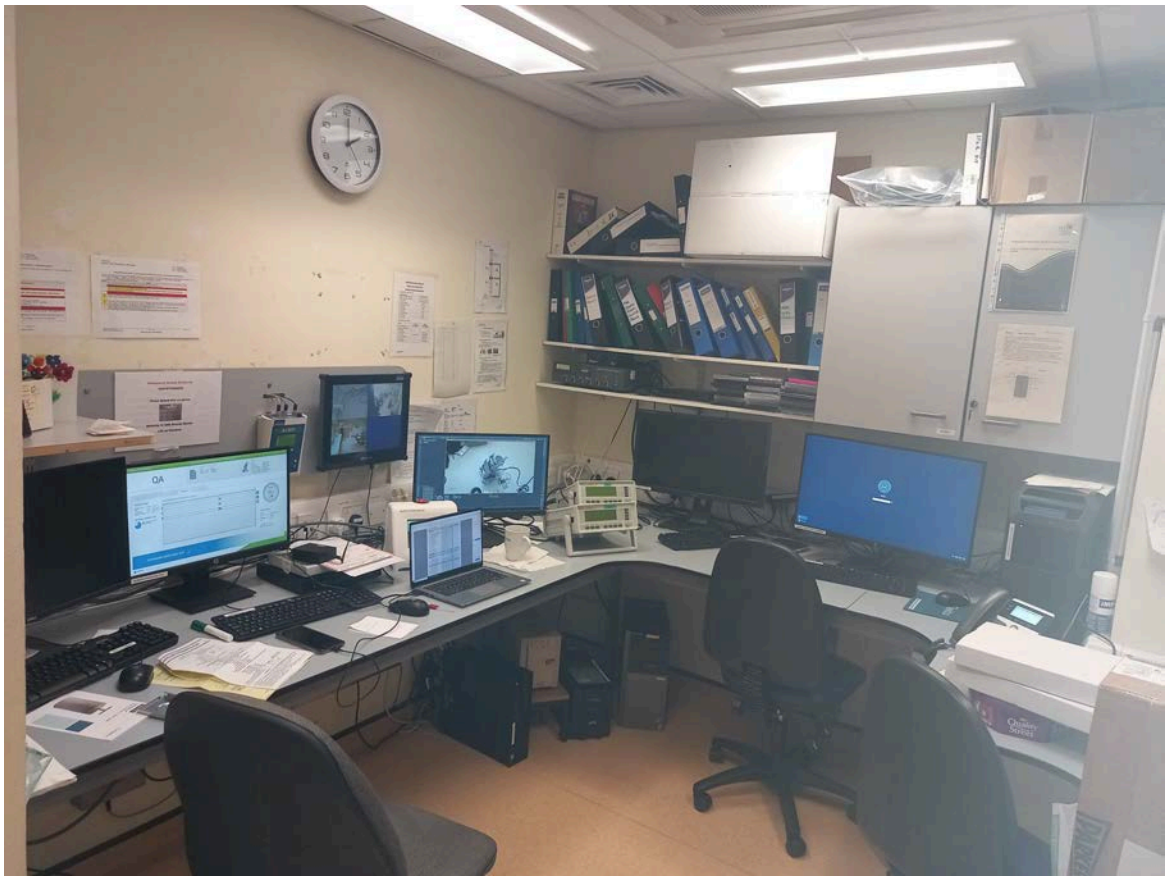


Figure 62: Brachytherapy control room



2.3.11 Drivers for Change – Molecular Radiotherapy

Current facilities for outpatient and inpatient therapies do not allow new advanced therapies to be offered within the SCAN region. This is driven in part by the **legislative requirements**, **to comply with Ionising Radiation Regulations 1999 on the specification and design of areas for the use of radioactive materials to ensure the safety of staff, patients and member of the public**. There is **no designated radioactive preparation area** within the inpatient ECC leading to transportation of a high dose radioactive source from another building at WGH to ECC.

The current MRT out-patient area is not fit for purpose due to the **physical condition, location and lack of space for expansion**. The area is shared with the DEXA service (50 patients/day) with no separation of cancer and non-cancer patient pathways.

The implementation of **new radioactive therapies for cancer services are constrained and cannot be introduced** (e.g. Lu-177 for prostate cancer) due to a number of shortfalls in the current outpatients accommodation: lack of radioactive toilet(s), no patient changing facilities, lack of suitable waiting areas for pre- and post- treatment, lack of suitable radioactive waste storage and unsuitable laboratory space.

Following a recent refurbishment of the RAI room in 2021 the current inpatient facilities are suitable for treatments up to 6Gbq. However due to engineering and structural constraints of this suite, **NHS Lothian cannot accommodate MIBG therapy** for neuroendocrine tumours as these therapies exceed our dose threshold.

2.3.12 Drivers for Change - Clinical Trials

The delivery of trial treatments requires sufficient space to safely manage any possible interventions if a patient has a reaction to the drug. These reactions may be less predictable with newer treatments, which is especially the case in Phase 1 (first in man) trials. Newer types of treatments may also require novel modes of administration or isolated delivery areas, which require dedicated facilities and space.

The clinical trials chairs are spaced at less than $2m^2$ per chair. Health Building guidance recommends $10m^2$ per chair for a range of reasons, including **health and safety, patient comfort, privacy, and infection control**. Some haematology trials patients are treated in Ward 7, newly refurbished in 2021 with $8m^2$ per chair, but still not built to current standards.

There are two individual rooms with a trolley in each room for the delivery of oncology SACT trials in Ward 1; Haematology has access to some in Ward 7.

Drugs **companies are reluctant to fund trials that cannot be delivered in healthcare facilities that comply with current hospital building standards, thereby limiting the novel therapies available to South East Scotland cancer patients**, such as gene and cell therapy. NHS Lothian does not currently have the pharmacy infrastructure or the footprint capacity to allow for an integrated gene and cellular AT(I)MP facility.

The **number of daycase chairs currently provide insufficient capacity** for the volume of clinical trials that are available. Furthermore, there are **no ring-fenced inpatient beds for overnight stays**, which further limits the types of trials that can be opened, especially accessing newer treatments in Phase 1 trials.

The need to travel to access clinical trials can in some cases be a barrier. This can be a physical, emotional, and financial challenge for patients and their families.

In summary, the lack of space for additional research staff and facilities, including for the storage and preparation of clinical trial medication, serves as physical constraint on the growth of the clinical trials programme. The integration of research, innovation and service elements would be achieved more efficiently with the correct adjacencies in place in a new ECC, allowing expanded access to the benefits of clinical research for patients, staff and service.

2.3.13 Drivers for Change - Pharmacy

The current pharmacy accommodation is **too small and cramped for the volume of SACT activity** going through the ECC. There has been some resource provided to the pharmacy team to account for increase in cancer activity however there has been no significant expansion in floor space for the delivery of clinical pharmacy services and medicines provision, both from the Dispensary and Aseptic Unit. This, compounded by the high volume of treatments confirmed on day, results in **increased waiting times for treatment delivery which adversely impacts on patient experience**. Completion of Oncology Enabling Works in Ward 1 will bring some improvement to the overall working conditions for Pharmacy but is restricted by the limits of the current buildings. The ECC in its present state does now have the space and flexibility to adapt to the increasing demand required from Pharmacy resources. This demand is generated by the population and incidence trends as well as the rate of new SACT treatments approved.

At present, due to ongoing staffing pressures and lack of funded spaces to complete the pharmacist independent prescribing course, there is **no capacity to extend non-medical prescribing activities**. This is however an area of practice with huge potential for growth.

Insufficient office accommodation for this critical and expanding group of pharmacy staff means that the team are based in different locations around the ECC and WGH site. This segregation can lead **to inefficient communications which can impact on treatment delivery**.

There are also mounting pressures and increased lead times within the supply chain for commercial pre-compounded aseptically prepared SACT. These **supply issues significantly increase the number of products which are required to be prepared** in the Aseptic Unit in ECC. The reduced capacity within the aseptic dispensing service will also impact on the number of treatments delivered. The National Central Intravenous Additive Service (NCIVAS) project has the potential to address growing demand for the safe and sustainable supply of aseptically prepared medicines across Scotland if it is re-framed and refocused to account for the growing demand with SACT. The progress of this project is monitored by the board of NHS Scotland Directors of Pharmacy. There is also a **planned closure of the Aseptic Unit at the Borders General Hospital**, of which aseptically prepared medicines will be supplied by WGH, which will further increase the pressures to the aseptic dispensing service on site.

A significant proportion of oral SACT medicines are currently delivered via either community pharmacies or homecare services. It was hoped these services could be expanded to release capacity from the ECC unit however **issues with Homecare providers mean the targets for efficiency savings are not yet being achieve**d. This has then impacted on the number of prescriptions which will are then provided via the daycase team in ward 1.

2.3.14 Drivers for Change – Patient Residency Accommodation

Bookings are made for patients who require to be close to the ECC for a course of treatment to stay in hotel or rental accommodation. The availability and cost of such accommodation close to the hospital varies greatly in Edinburgh, which results in uncontrolled cost pressures for NHS Boards and sub-optimal locations for patients.

Dedicated accommodation, either on or near the WGH site, where patients could stay with a carer for support would improve their experience. It would also reduce admissions of patients who do not require an inpatient bed but need to be on site for a course of treatment.

2.3.15 Drivers for Change - Workforce

There are currently significant workforce challenges impacting on the cancer service model, some examples of which are detailed below.

There are supply shortages of medical specialties within cancer services within Scotland and the UK as a whole. There are also significant demographic challenges within specialties, 21% of consultant Clinical Oncologists are aged over 55 years old, within Haematology this is 24%. It will be key that national

training pipelines set by the Scottish Government are set at a level which ensures there will be capacity to both expand the workforce and also meet future retirals. NHS Lothian has requested that the Scottish Shape of Training Transition Group, which plans training numbers nationally, undertakes a national review of oncology and haematology training numbers as part of the 2022 planning process to ensure training numbers are adequate. The development of the new state of the art centre and expanded focus on research should however represent a highly attractive environment within which to work.

There are currently significant challenges within registered nursing training pipelines, with 23% aged over 55 nationally, most of whom are eligible to retire from the age of 55. Within the Cancer Service the profile is younger than this, however within the next 5 years 28% of the workforce will be aged 55 and over. There has been recognition nationally that there have been insufficient training numbers and these have been increased in recent years, however establishment gaps are continuing to grow and this will remain an area of risk until such time as establishment gaps close within all boards.

Given the requirement to increase the number of linear accelerators within the reprovision there will be a requirement to expand both the Oncology Physics and the Therapeutic Radiographer workforce.

Within the Oncology Physics workforce 26% are aged over the age of 55 of whom 55% are aged over 60 and therefore highly likely to be eligible to retire now. This is a picture that is likely reflected nationally. There is national recognition that the 5 current training places for Clinical Scientist trainees is insufficient and will require to be increased and established funded training places for Clinical Technologists (including Radiotherapy Engineering) are required. Given the requirement to increase the number of linear accelerators within the reprovision there will be a requirement to expand this workforce. It will be important therefore that at OBC stage that training pipelines are evaluated to highlight any gaps and actions required to sustain, develop and expand the workforce.

Therapeutic Radiography has a young workforce with many flexible working requests that need to be managed and facilitated leading to the requirement for a higher number of trained staff to provide the equivalent WTE. In addition, the increased number of Linacs will require additional staff and associated training places in the higher education establishments providing suitable courses (QMU and GCU).

Pharmacy services are experiencing significant recruitment challenges, especially in acute services with pharmacists and suitably trained pharmacy technicians. There is also a significant proportion of rotational staff who require training to be able to deliver the service. Focus is given to delivery of safe and effective direct patient care with other non-patient facing medicines governance activities being adversely affected, which can lead to delay in accessing new treatments. This includes implementing new SACT protocols, implementing early access schemes to SACT and participating in national developments in clinical management guidelines.

Increased funding for training non-medical prescribers through NHS Education for Scotland would be welcomed.

The reprovision will require an expansion in the highly specialised pharmacy workforce in line with both the expansion of services and Advanced Therapeutic Medicinal Products (ATMPs) as well as the impacts as yet unknown of pharmacogenomics, on treatments and doses used.

The table below summaries workforce pressures across staff groups in ECC.

Figure 63: Current workforce pressures

Staff Group	Comments
Oncology doctors	Small numbers of Oncologists completing training so not always able to recruit to needed sub-specialty. Recent challenges in recruiting Breast medical oncologists and GI Clinical Oncologists.

Staff Group	Comments
	Clinical Oncology has nationally recognised deficit in training places. Large number of Clinical and Medical Oncologists in 50+ age group.
Haematology doctors	National challenges around availability of Consultant staff.
Breast Surgeons	Dependent on number of trainees coming through and can be competitive to attract candidates.
Specialty Doctor Posts	Nationally challenging to find good quality applicants across all specialties.
Specialist palliative care	Lack of funding to support service expansion; SG funding is focused on early parts of cancer pathways
Physicians Associates	NHS Lothian currently developing a training programme for these roles.
Oncology Physics	Highly specialist staff group, can be challenging to attract candidates with UK wide difficulties in recruitment.
General Nursing	National shortage of registered nurses with future challenges expected due to a significant volume being expected to retire due to changes in public sector pension scheme over the next 5 years.
SACT trained nurses	Ongoing difficulty in recruiting SACT trained nurses – reliant upon training from existing general nursing staff.
Advanced Nurse Practitioners (ANP)	ANP posts can be recruited directly from external sources, or recruited from within to a trainee post which then takes 2-3 years to complete the training. This opportunity can leave gaps in ward nursing provision and the development requires significant support from the medical staff throughout.
Clinical Nurse Specialists (CNS)	CNS posts often are recruited from within the service and can leave significant gaps in ward nursing provision.
Radiologists	National shortage of Radiologists including Breast Radiologists.
Pathologists	National shortage of Pathologists.
Cancer Pharmacists	National shortage of available qualified staff. Recruitment and retention pressures due to the expansion of the primary care sector. There is a current challenge to balance the delivery of care with the training demand to allow for the training of staff with an already reduced number.
Pharmacy Technicians	National shortage of available qualified staff.
Therapeutic Radiographers	National shortage of available qualified staff.

Addressing these workforce challenges is discussed in section 3.2.4 of this IA.

With an increase in workload and complexity of work, there requires to be an environment that will attract and retain staff and facilitate innovation and change. Fit for purpose clinical and supporting accommodation is required to support efficient and productive working and enable quality improvement.

2.3.16 Site Masterplan

2.3.16.1 Masterplan Development

The Western General Hospital Strategic Development Masterplan or 'the Masterplan' was produced in 2013 in response to the deteriorating estate and growing fragmentation of services, creating a negative impact on staffing models and reduction in adjacency efficiencies for workforce and equipment within the hospital. It has been developing continuously over the past eight years and was endorsed at the NHS Lothian Finance and Resource committee and NHS Lothian Strategic Planning committee in 2019.

The Masterplan provides the vision for a site wide clinical service and estate development/ improvement model through to 2045. It is based on predicted clinical service demands and physical estate and servicing requirements over the next 25 years. It seeks to transform the hospital into a suitable efficient and safe 21st century healthcare campus.

It is important to acknowledge the Masterplan as a programme of development rather than a single event, within which there will be a series of projects which will run concurrently with many interdependencies and overlaps. The WGH Masterplan sets out six phases of work over the next 25 years.

Masterplan development has been underpinned by site analysis, including a review of existing estates data and clinical adjacencies on site. This detailed site analysis identified constraints and opportunities, topography, climate aspects, green space, roads and car parking, servicing and associated operational issues, site history and infrastructure issues.

The Masterplan includes a net zero carbon strategy seeking to meet the objectives of the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, by 2045.

This proposal for ECC is key to the first three phases, the first of which is underway with a series of enabling projects and infrastructure projects due for completion by 2023.

Phase 1 *– Oncology Enabling and Infrastructure (complete by 2023)*

- Clinical Trials
- Haematology
- Oncology/ Cancer Assessment
- Renal
- Infrastructure Phase 1 and 2/ Laundry Demolished

Phase 2 *– ECC Preparations (complete by 2026)*

- ECC Site Cleared/ Prepared
- Car Parking Site Prepared
- Microbiology demolished

Phase 3 *– ECC Construction (complete by 2029)*

- ECC Complete
- ECC Car Parking Complete
- RIDU/ CJD demolished

2.3.16.2 Place Brief

NHS Lothian approached the City of Edinburgh Council in December 2017 to discuss proposals for key elements of the redevelopment at the Western General Hospital. It was agreed that the importance of taking account of the wider geographical area and providing early and meaningful engagement with clinical practitioners and service users was required to take forward the proposals. Discussions took

place on the options for establishing an agreed framework for bringing forward a number of planning applications in a phased manner.

The development of the Place Brief did not appraise or involve other public sector assets in the community and asks beyond the town planning requirements, because of the scale and primary purpose of the WGH site. NHS Lothian continues to work with City of Edinburgh Council through its Place Based Opportunities Board where assets are considered in a strategic place based appraisal.

It was agreed that a Place Brief was the preferred approach as this required a balance between certainty and flexibility in terms of planned development and timescales.

Alongside ensuring engagement with patients, staff and the community during early planning stages, the Place Brief should help to facilitate timely planning approval for each development on site in alignment with the site Masterplan.

Figure 64: Masterplan for WGH Site in 2045

2.3.16.3 Drivers for change

There are several key and strategic drivers for the Masterplan and each phase of the masterplan effectively addresses these. They can be summarised as:

- Support the vision for a clinical service model on site
- Improve clinical adjacencies and pathways to optimise quality, efficiency and research
- Provide flexibility in development sites and sequencing of potential projects
- Incorporate the co-location of other organisations and services on site
- Improve infrastructure
- Demolition of sub-standard estate (condition and functional suitability)
- Reduce backlog maintenance requirements
- Provide a future development framework for the site that can be supported by all key stakeholders
- Provide a suitable context for town planning dialogue and future planning approvals

2.3.17 Sustainable Development Action Framework

As an anchor institution, NHS Lothian seeks to be a good neighbour, a good consumer, and a good employer by deploying its influence in purchasing and procurement, its assets and facilities, its significance as a regional employment hub to impact positively the health and wellbeing of the local population. The Sustainable Development Framework is a key component of this approach.

The Framework sets out ambitions, promotes engagement and action, and is a key driver for change, ensuring the WGH has a clear pathway to net zero carbon emissions.

The framework sets the following policy aims:

- Develop an energy efficiency strategy across the site to identify, prioritise and implement measures to reduce demand for energy.
- Reduce energy demand and emissions from existing buildings and embed sustainable design in forthcoming capital projects.
- Optimise existing buildings to reduce consumption and improve the internal environment for patients and staff.
- Reduce the impact of buildings that contribute to environmental issues of air quality.
- Ensure good quality greenspace design is incorporated into development programmes.
- Develop connections between the WGH, community greenspaces and wider green networks and fully realise the potential of the NHS outdoor estate as an environmental and health asset.

As part of the property review supporting this IA, information from the Sustainable Development Action Framework has been reviewed in conjunction with real world evidence from general site familiarity to help further inform more detailed views on site suitability.

Improving the estate and embedding best practise in new builds and refurbishment will help to reduce emissions and improve our internal environments. At present the existing blocks within the ECC demolition zone, due to their age and nature of construction, fall significantly short of meeting current technical standards in relation to building fabric and control of emissions.

The outdoor estate is a valuable and under used asset. If planned and managed well, they can make a significant contribution to the physical and mental health and wellbeing of our staff, patients, visitors and local communities. At present the outdoor estate of the ECC demolition zone is significantly compromised due to piecemeal development with very little consideration of public realm.

WGH is responsible for 25% of NHS Lothian's energy demand. A project has commenced to replace the site energy infrastructure with a focus of developing a carbon pathway to 2045. The Energy Infrastructure project, currently at OBC stage, is being progressed to ensure that there is a clear strategy for the de-steaming of the site with replacement lower temperature hot water systems, renewable energy solutions and improvements to the performance of existing plant to be retained alongside the upgrades to the whole site High Voltage power networks and including a new incoming transformer.

2.3.18 Drivers for Change – Estate Challenges

2.3.18.1 Space Utilisation

As part of the PAMS and the clinical data review carried out in support of the development of the Draft Schedule of Accommodation, there is now a clear understanding of the current space utilisation performance of the WGH site.

It is clear that the ECC facilities are being fully utilised, and this is with significant limitations to functionality as described below. The existing ECC zone is not capable of being further adapted or extended to function and support the longer-term activity projections.

2.3.18.2 Functional Suitability

The existing ECC facilities are, in the greater part, not functionally suitable and have many noted deficiencies. The challenges described under the Existing Service Provision (section 2.2.3) can be summarised as the following functional failings:

- Infection control risks
- Safety concerns
- Space, including for
  - storage
  - waiting rooms
  - patient / visitor toilets
- Insufficient clinical accommodation to meet modern standards, HEI and waiting time requirements; equitable access to care in both standard and clinical trial settings
  - Number of consulting, procedure and treatment rooms
  - Beds spaced at less than current guidance, compromising access in an emergency, and space for monitoring, testing or hoisting equipment
  - 42% of beds are in single en suite rooms, where 100% is recommended
  - Pharmacy preparation and delivery
  - Chairs (at 2m spacing rather than recommended 10m)
- Configuration
  - Layout and adjacencies within ECC do not support effective patient flows or efficient staffing
  - Disparate buildings, linkages and various access levels in and around ECC cause access issues and confusion for patients and visitors

2.3.18.3 Quality

The Achieving Excellence Design Evaluation Toolkit (AEDET) process is a useful exercise in identifying quality issues in the current facility. The process involves a range of stakeholders including clinical, administrative and facilities staff along with patient representatives. In addition to the functional issues listed above, further quality issues raised included:

- Poor wayfinding/ signage
- Lone working in disparate services raises security and safety concerns
- Lack of proper pavement access routes from Crewe Road South
- Difficulties in using wheelchairs across site due to complexity of levels
- Congested entrances, corridors and lifts
- Reception and waiting areas in Ward 1 described as 'miserable'
- Sensory impairment considerations required (e.g. lighting)
- Lack of space for reflection / spiritual care that is contemplative, peaceful etc
- Availability of and access to parking poor – for patients, visitors and staff
- Very tight spaces for ambulances and not always possible to drop patients at correct location
- Lack of good quality external amenity space
- Limited shower /changing facilities for staff
- Safe cycle routes and cycle storage
- Staff wellbeing facilities not fit for purpose
- Long dim internal corridors – lack of daylight
- Environmental problems – overheating / ineffective heating
- IT infrastructure requires upgrade

The full AEDET report is attached at Appendix 4. It should be noted that a number of quality issues have been or are being addressed as far as possible, wither through the Oncology Enabling Programme in ECC, or other initiatives on WGH site. However, the scope to fully address the functional and quality issues identified in the existing accommodation is limited.

2.3.18.4 Overall Facility Related Challenges

In summary, there are several existing facility related challenges which do not support the implementation of new models of care for cancer treatment at the WGH.

The conclusions from the above reviews were that:

- Backlog and Life Cycle performance will be improved in part through the Oncology Enabling programme but not proportionately to the investment required relative to full replacement by new facilities.
- The reported backlog and overall life cycle investments requirements will be, based on generally accepted national norms, at least three times those reported to deliver the relevant improvements through actual projects.
- Oncology Enabling Programme and the recently completed Haematology project are a relatively short-term solution and do not support the implementation of new models of care or have the flexibility to deal with new treatments and technologies as they become available.
- External areas on the hospital site are tight for all types of vehicle access and manoeuvring generally. As such this presents risks to the public and staff. This is being addressed through the masterplan development, but the problems are particularly evident in the existing ECC Zone.
- The ECC blocks are fully utilised and generally functionally unsuitable.
- There are a significant number of Functional Suitability issues noted with the facility that cannot be addressed within the existing floor plate and overall configuration constraints.
- Feasible improvements will be carried out to improve functional suitability and utilisation through the enabling projects but within a constrained footprint and tight overall site zone.
- Patient flows are generally poor, and this is due mainly to cramped conditions with poor adjacencies. This is further reflected in privacy and dignity issues for patients visiting many areas of the facility.
- Further expansion options in this zone of the site are extremely limited, and the potential benefits would be difficult and expensive to realise while still potentially creating other complex issues that would need to be resolved.
- Even with the additional single rooms created through the Oncology Enabling and Haematology projects, single bed provision continues to be very limited without significant investment in a compliant new build – which is not feasible with the current site zone constraints.
- Improvements proposed generally mean only relatively small gains due to the ageing and inflexible building arrangement but require to be carried out due to the urgent nature of a number of issues.

2.3.19 Summary of Need for Change

The table below summarises the need for changes described in detail above and outlines why action should be taken now to address these needs.

Figure 65: Summary of need for change

What is the cause of the need for change?	What effect is it having, or likely to have, on the organisation?	Why action now:
Existing service model unable to meet increasing demand	Facilities and existing capacity unable to meet with projected demand with a negative impact on timely access to safe care and unavailability of some treatment options in the South East region, exacerbating health inequalities in Scotland	Safety, waiting times performance and future service sustainability
Current environment does not meet national standards for patient care	Safety issues, including infection control, highlighted in Healthcare Environment Inspectorate (HEI) reports Patient experience not optimum in current accommodation Challenges to recruit staff to sub-optimal clinical and working environment	To mitigate safety risk To improve patient experience Future service sustainability at risk
Challenging to recruit and retain specialist staff due to lack of opportunities	Workforce challenges causing detrimental effect on service provision and capacity	Future service sustainability at risk
All cancer treatments not available in Scotland	Patients travelling to other UK centres/ abroad for certain treatments e.g. proton beam therapy	Where possible: Improve patient experience – care closer to home Reduce financial impact
Restricted Clinical Research and Trials portfolio	SCAN Boards, through NHS Lothian, unable to participate in full complement of trials	Increase financial income from commercial trials Provide access to most innovative treatment options – expanding patient options and allowing optimum outcomes Drugs cost avoidance Opportunity in early phase drug cell therapy production

Services, which should be co-located split over multiple locations on the WGH site	Split locations result in inefficiencies in service provision, duplication of work, loss of possible collaboration	Increase collaboration and improve patient experience Reduce financial impact

2.4 Opportunities

The opportunities afforded by this proposal are far reaching. The reprovision of cancer services in a new Edinburgh Cancer Centre for the South East region will enable services to meet all applicable clinical and technical standards as well as respond to a rapidly increasing demand for cancer services by delivering a transformed model of care. Achieving the vision of transformed and improved cancer services and pathways for adult patients from across the South East region will afford key opportunities, which align with the Benefits and Investment Objectives in this proposal.

- Transformation of cancer services and pathways across the region and within the ECC to improve cancer outcomes;
- Streamline patient pathways and maximise efficiencies based on a patient focused, holistic approach;
- Diagnose cancer earlier with rapid access to diagnostics, closer to home;
- Offer a range of specialist cancer therapies to patients in the SCAN region;
- Provide facilities to deliver safe and effective, high quality clinical care, designed to optimise efficiencies and new technologies;
- Provide care closer to home, where clinically appropriate and financially viable, through collaborative working with regional partners to provide a consistent model and quality of care
- Provide equitable access to the most innovative therapies, optimise resource utilisation and patient outcomes by integrating Cancer Research with core services across the region
- Alignment with local and national cancer strategies (as outlined in Appendix 2);
- Make opportunities available to ensure recruitment and retention of specialist staff from across the UK and beyond; teaching, training, research and academic opportunities;
- Build resilience in Scotland's specialist care capability, thereby reducing reliance on NHS England, reducing associated excess treatment costs and reducing travel associated barriers to access.

The opportunities around regional service delivery and transformation, and delivery of trials and research are articulated in more detail as part of the proposed Clinical Model below.

2.4.1 Regional Collaboration

As a member of the South East Scotland Cancer Network (SCAN), NHS Lothian works with NHS Borders, NHS Dumfries and Galloway and NHS Fife to plan and deliver cancer services across the South East of Scotland. The 2022 Service Model Review and the development of this proposal are evidence of the long-term collaboration across the region. This work has fed into the development of options and the service scope included within these options – this is covered in greater detail within the Economic Case.

This reprovision project offers real opportunity to collaborate in transformative service delivery across the region, ensuring that the correct services are provided in the best place, offering sustainable cancer services to local populations, with the optimum specialist tertiary cancer centre in ECC.

2.4.2 Strategic fit

This proposal delivers on the strategic vision set by the Lothian Hospitals Plan and cemented in the Lothian Strategic Development Framework, with sustainability of the WGH as one of three acute, or 'hot' sites being critical to the system.

Site	Strategic Headline
Royal Infirmary of Edinburgh	South East Scotland's emergency care centre, incorporating a major trauma centre, orthopaedic services, neurosurgery, and children's tertiary care
St John's Hospital	An elective care centre for Lothian and for the South East Scotland region, incorporating highly specialist head and neck, plastics and ENT services

Western General Hospital	Acute receiving, medical, surgical, cancer and critical care services **The specialist Cancer Hospital for South East Scotland, incorporating breast, urology and colorectal surgery**
Royal Edinburgh Hospital	Edinburgh's inpatient centre for highly specialist mental health, physical rehabilitation and learning disability services, incorporating regional and national services

The Strategic Assessment for re-provision of the ECC at WGH (see Appendix 1) was first submitted to Scottish Government in December 2016 and is a core thread in NHSL's Property and Asset Management Investment Plan, submitted every two years, and Masterplanning for the campus.

Colorectal, Urology and Breast surgery are all located at the WGH and have critical links with oncology and radiotherapy services – in addition to the links with the University of Edinburgh, Genomics research and the Maggie's Centre (the original such centre in the UK).

The lessons from the 2015 HIS review of the Beatson and current planning and clinical concerns expressed about Velindre in Wales have reinforced that it is essential that the Cancer Centre is on an acute site and does not stand alone.

Previous high level assessments of alternative sites for *ECC or whole WGH reprovision* considered and ruled out other Edinburgh sites, in part due to the Lothian Hospitals Plan commitment that the WGH would continue to provide the Cancer Hospital for South East Scotland. Other reasons were:

1. Royal Victoria Hospital Site – extensive site in ownership of NHS Lothian but constrained by access and development massing limits.
2. Fettes Police HQ site – public sector owned with expectations of disposal for residential development. Planning constraints limit massing and development potential for major blocks.
3. Granton and associated development areas – sites limited by current or near future planned housing development. Larger sites had exposed waterfront location, with limited public transport access.
4. Edinburgh BioQuarter alongside the Royal Infirmary of Edinburgh - location would undermine strategic direction and sustainability of the WGH; break links with the University of Edinburgh cancer campus at WGH.

2.4.1 Service Model Review

NHS Lothian appointed experienced healthcare planners to work across the SCAN Boards on a regional service model review to develop options and underpin the proposal for this reprovision of the specialist cancer centre supporting that model of care. The scope included:

- to review current and proposed models including performance assumptions across planned patient care, acute oncology and radiotherapy;
- to review best practice examples from elsewhere across all areas of service delivery to identify any potential changes to the model of care;
- adopting a regional approach, identify and evaluate any alternative regional configuration options; and
- determine the clinical facility requirements resulting from the proposed service delivery and regional configuration option.

The review was chaired by the NHS Lothian Medical Director with representation from regional planning, senior management and strategic planning from each partner Board, and workforce planning.

This work was undertaken from November 2021 to April 2022, to refresh and validate project engagement undertaken from 2018-2020 (see Economic Case for engagement activities).

The findings of the service model review form the foundation of this proposal for reprovision of the ECC, and will be developed into briefing for design after approval of the initial agreement.

2.4.2 Clinical Brief

Departmental working groups have been established to develop Clinical Output Specifications on the basis of the service transformations described above and the drivers for further change. Information for some departments is more mature than others, however enough information has been developed to inform high level specifications and an initial schedule of accommodation for the shortlisted options.

Prior to the commencement of OBC, a full Clinical Brief will be developed to articulate baseline service requirements in advance of any conceptual design work taking place.

2.4.3 Service Transformation

The challenges and obstacles identified as drivers for change are considerable. At the same time, extensive efforts have been made and continue to be the focus of work through SCAN and also independently by boards and their service teams.

Within cancer services, examples of transformation, which evidence a continued drive for transformation and flattening the demand curve, include:

- Conversion from Inpatient to Outpatient chemotherapy delivery;
- Enhanced provision of oncological care closer to home by expansion of Oncology Outpatient and Systemic Anti-Cancer Treatment provision in West Lothian and in Fife;
- Implementation of biosimilar drug switches (subcutaneous to Intravenous) with significant financial savings and improved service resilience;
- Opening of a supportive care delivery unit at East Lothian Community Hospital, with development of the same for Midlothian currently underway;
- Change from Inpatient to Outpatient stem cell transplant service for Haematology;
- Rapid roll out of existing Haematology virtual clinics model to apply across all of Cancer Services, expedited during COVID;
- Extensive workforce remodelling using Non Medical Prescribers and Advanced Nurse Practitioners in SACT pre-assessment, prescribing and in acute oncology service and the cancer treatment helpline;
- Advanced Practitioner and Consultant Therapeutic Radiographers to support and streamline the radiotherapy pathway;
- New Acute Oncology, Cancer of Unknown Primary and Enhanced Supportive care service in West Lothian; and
- Expansion of clinical research capacity across SCAN to improve patient equity to trials access, optimise resource utilisation and release large drugs budget savings from commercially funded studies.

A full list of transformation projects delivered through ECC since 2018, for NHS Lothian and partner NHS Boards, is included in Appendix 5.

From the range of transformation achievements it is evident that there is healthy culture of service transformation in cancer services, in order to deliver improved clinical outcomes, quality of life and experience for patients on and after treatment

This dedication, appetite and capability is key for the challenges to come in designing and delivering a reprovision on the scale of this proposal.

2.4.4 Innovation

Optimisation of efficiencies and new technologies within service and building design have been explored in the development of this proposal. Continued focus on opportunities for will be central to ongoing development of the ECC proposals.

Optimisation of efficiencies and new technologies within service and building design have been explored in the development of this proposal. Continued focus on opportunities for innovation will be central to ongoing development of the ECC proposals. These will be aligned with the strategic goals of the ECC, and key requirements such as more digitally-enabled care and more care at or closer to home

The Edinburgh Cancer Centre will work in collaboration with Health Innovation SE Scotland[34] (HISES); to identify key innovation challenges, scope solutions, and develop solutions. A range of approaches will be used, including stakeholder workshops, care pathway analysis, and public engagement to ensure that challenges are identifies with a high potential value to change the way services are delivered to be patient-focussed and efficient.

Completed workshops helped to identify existing challenges and how these might be able to be overcome using new technology and innovations. Some problems can be addressed without a new building, whilst others are intrinsic to the construction and infrastructure associated with new facilities. Some of the proposed initiatives require further dialogue at a local, regional and national level.

With the formation of the South East Scotland Cancer Innovation Programme governance group and steering group, hosted by NHS Lothian and supported by HISES, the aim is to identify solvable innovation challenges and manage these with a portfolio approach. Prioritisation by the steering group with consideration of the clinical impact will inform a programme of work to enable a more structured approach to support Cancer services transformation. Central funding has been made available to develop or procure from the programme of works, with a focus on innovations to reduce footfall, decrease the need for direct clinician time with patients, improve efficiency and quality of care, and deliver personalised Realistic Medicine. This will be done through partnership between the clinical service, HISES, third sector partners (MacMillan), industry collaborators, and the Digital Health and Care Innovation Centre (DHI). Maximising the opportunity from novel health technology and Artificial Intelligence, for example, in relation to imaging and diagnostics, will also be a strong focus to potentially improve quality and relieve clinical service pressures.

Careful mapping of the patient pathway will be required to determine the key areas of need and development to support the strategic aims of ECC, HISES and SG. Examples that will likely form the programme of works will include using digital platforms already developed in other areas with industry partners to provide innovation in cancer pathways, for example in relation to comprehensive high-quality information and guidance for patients, remote consent approaches for treatment, self-monitoring of treatment effects and side effects (SACT), and other aspects of self-management. For example:

- Tailored Talks digital platform for cancer services content, where clinicians produce comprehensive high-quality information and guidance for patients, which is delivered via digital media to provide personalised information/support for self-management.
- E-consent, a projects is already in process within Scottish Government to consider SACT e-consent.

A key role for the cancer innovation programme will be to ensure innovations remain focussed on service needs, are integrated and joined up, and evidence-based. Ensuring systems can communicate

[34] https://hises.edinburghbioquarter.com/

and work synergistically and are complementary will be a strong focus, with the goal of strong patient facing elements fundamental to strategy.

The ECC is already working to develop international research collaborations with other leading centres and industry. This will continue to develop with international research exchange programmes and formal international partnerships. Opportunities for international collaboration will be greatly enhanced by state of the art facilities and technologies. This in turn will create greater opportunities for inward international investment, enhancing Scotland's reputation and drawing top global talent to Scotland.

2.4.5 Cancer Information Programme

The provision of cancer services uses diverse clinical systems across NHS Lothian, partner Regional Boards and central NHS Scotland services. As the regional tertiary referral centre, the Edinburgh Cancer Centre has, for 46 years, maintained a treatment and outcomes database. This is an internationally unique data asset which opens a wide array of cancer opportunities for Scotland.

The Cancer Information Programme has an established Cancer Information Team who provide SCAN with robust data and reports, including the expert analysis required to interrogate the complex datasets behind these reports. This helps to drive ongoing service improvement and to monitor the impact of cancer services on patient care. Research level data and analysis is also provided to various research studies undertaken with partners in the University of Edinburgh and others, further highlighting the ongoing benefits of a dedicated Cancer Information and Informatics team.

Going forward, the Cancer Information Programme will continue to develop its cancer database, adding various cancer datasets that are currently held in various different locations, to create a hugely powerful, single database resource that will speed up information requests and enhance data acquisition for the benefit of patients across the SCAN region, Scotland and the world.

2.4.1 Learning from other sites and systems

The ambition of this programme is to set a world class standard of evidence based, cost effective service and research aimed at improving cancer care for the population of SE Scotland and the nation as a whole, in collaboration with other centres and stakeholders across the region and the nation, helping improve patient outcomes and drive up quality here and across Scotland.

NHS Lothian are keen to learn from and collaborate with other cancer centres and reprovision projects. This has been done through visits, meetings, and drawing on healthcare planner experiences of other projects.

The project team have visited Christie Centre, Manchester and Northern Centre for Cancer Care in Newcastle; the Project Owner visited the tertiary teaching hospital cancer centre in Copenhagen, Denmark in 2020. Discussions with NHSGG&C about the Beatson satellite unit in Lanarkshire and the Victoria Comprehensive Cancer Centre (Melbourne).

The proposed clinical model has been reviewed by a clinician involved in the development of The Clatterbridge Centre in the Wirral. The proposal has been cognisant of lessons learned from The Beatson, Glasgow and more recently Velindre Cancer Centre in Wales.

2.5 Investment Objectives

2.5.1 Vision

Through a series of workshops with wide representation from multi-disciplinary staff from across the SCAN region, a vision for the future of services at ECC was developed and agreed:

Vision

To develop a world class specialist cancer centre and service on behalf of the region – and nation.

To be recognised as a world leading centre for cancer research, innovation and clinical academic opportunities.

This was agreed by regional representatives at a series of meetings held in November 2018 and re-affirmed in 2022 by the Cancer Capital Programme Board, as the steering group for this proposal.

2.5.2 Investment Objectives

The assessment of the existing situation and the drivers for change have been used to identify what has to be achieved to deliver the changes required to deliver the vision.

These are defined as the investment objectives and are summarised in the table below with further information to follow:

Figure 66: Investment objectives

Effect of the need for change on the organisation:	What has to be achieved to deliver the necessary change? (Investment Objectives)
Facilities and existing capacity unable to meet projected demand resulting in patient treatment delays	Increase service capacity and sustainability to meet demand and provide timely service access for patients to improve their outcomes
Safety issues highlighted in Healthcare Environment Inspectorate (HEI) reports Patient experience not optimum in current accommodation Split locations result in inefficiencies in service provision, duplication of work, loss of possible collaboration	Design buildings to provide appropriate facilities for clinical care that meet all required standards, allow service collaboration and provide an improved patient experience
Workforce challenges causing detrimental effect on service provision and capacity	Improve recruitment and retention of specialist staff to deliver the best for patients Offer a range of education, training, research and academic opportunities for professional development
Patients travelling to other UK centres/ abroad for certain treatments	Offer a wide range of specialist cancer therapies to the patients of South East Scotland
SCAN unable to participate in	Integration of Clinical Research and Trials with

Effect of the need for change on the organisation:	What has to be achieved to deliver the necessary change? (Investment Objectives)
full complement of trials	Cancer Services to enable access to an expanded range of trials and improve patient outcomes

Objective 1: Increase service capacity and sustainability to meet demand

The preferred option will provide increased service capacity to meet the demand as predicted by the forecasting detailed in the Strategic Case. A consistent timeframe will be used to determine the capacity requirements for each service area. Innovative service transformation will continue to be undertaken to provide a service model that is sustainable and delivers excellent patient care and outcomes, through efficient pathways for patients across the region.

This will include implementing the outcomes of national strategic reviews including, but not limited to, Genomics, Oncology Services and CAR-T Cell therapy.

Objective 2: Building designs will provide appropriate facilities for clinical care that meet all required standards

The design and specification of the built environment for the preferred option will meet current standards such as room sizing and chair spacing as far as is possible within the identified footprint. Further, the preferred options should deliver co-location benefits that allow an integrated cancer service promoting collaboration between services to drive efficiencies and excellent patient care.

Objective 3: Opportunities available to ensure recruitment and retention of specialist staff. Offering a range of education and training for professional development

The preferred option will help to drive the development of Scotland's future cancer workforce with a focus on several key areas:

- Offering more attractive and rewarding careers in which specialist cancer staff can pursue their ambitions (e.g. research, teaching, extended roles) and where non-specialist staff can pursue an interest in cancer care, e.g. GPs and Practice nurses.
- Providing a regional cancer training centre with a wide range of education, innovation, research and training opportunities for professional development across the South East region, e.g. Acute Oncology and SACT
- Providing safe, appealing physical working environment that meets required standards (linked to Objective 2)
- Actively driving role redesign and development of extended roles which align with the development of innovative technologies.
- Collaboratively developing a sustainable service model that allows staff to continue to provide excellent patient care and outcomes through a wide range of cancer treatments across the region (linked to Objectives 1 and 4)
- Provide a strong research and clinical trials model to support staff in their research & development aspirations to further improve patient outcomes (linked to Objective 5)

Objective 4: Wide range of specialist cancer therapies available for the patients of South East Scotland

The preferred option will include a service model and build environment that allows the provision of a wide range of cancer therapies current available in the UK, at the Edinburgh Cancer Centre (ECC) and across the South East region. This will:

- Reduce the patient travel by providing treatment closer to home
- Allow staff to gain experience and develop their skills and knowledge in the delivery of a wider range of treatments
- Allow the ECC and South East region cancer service provision to be at the forefront of cancer treatment in the UK
- Build resilience into Scottish Specialist Service model and thereby reducing reliance on NHS England

Objective 5: Integration of Clinical Research and Trials with Cancer Services

The preferred option will enable the integration of clinical research and trials with cancer services through physical co-location and service model collaboration. This will help ECC to optimise NHS treatment capacity, better manage demand, improve outcomes and reduce harm by driving the move to personalised, targeted therapies and provide the widest range of cutting edge treatment options.

In assessing the options against the investment objectives described above, preferred options will be identified that can deliver benefits to patients, staff, NHS Lothian, Regional Boards, local communities and the wider economy. Consideration of the desired benefits to all stakeholders, and wider economic benefits, are outlined in the following sections.

2.6 Benefits

The identification of benefits is a key part of developing the project and justifying the business case for it, allowing options to be assessed to determine the preferred solution, and also providing the framework against which the success of a project can be measured.

A Strategic Assessment was completed identifying the need for change, benefits of addressing these needs and their link to NHS Scotland's five Strategic Investment Priorities below:

- Safe; Person-Centred; Effective Quality of Care; Health of the Population; Efficient: Value and Sustainability

A Stakeholder workshop on 30 July 2019 explored the proposed investment objectives in detail and considered the benefits that may be realised. Stakeholders included patients, staff and partners across NHS Lothian, NHS Borders, NHS Dumfries and Galloway and NHS Fife. Through group working sessions, the benefits listed within the strategic assessment were endorsed and additional benefits were suggested and have been incorporated as noted in the following section.

2.6.1 Benefits Identification Methodology

The following methodology has commenced to identify the numerous possible benefits from the project. Due to the scale of the project and the wider ranging benefits that could accrue from it, steps 1-5 have been undertaken as part of the IA, steps 6-7 will be undertaken through the OBC and step 8 as part of the Post Project Evaluation (PPE) process.

1. Identification of benefits to project stakeholders (e.g. NHS Lothian staff, patients and partners).
2. Identification of wider inclusive net zero economy benefits (e.g. drivers of economic growth or reduced emissions).
3. Mapping of identified benefits to NHS Scotland Strategic Priorities and the Scottish Government National Performance Framework Outcome and Indicators.
4. Review of benefits in the context of the above mapping to determine how these benefits could be measured (quantitatively or qualitatively).
5. Review of benefits to identify where a financial benefit would be accrued that should be included within the financial options appraisal and assessment of how this financial benefit would be measured.
6. Engagement with stakeholders to weight benefits to confirm relative importance to the success of the project.
7. Scoring of each shortlisted option against the identified benefits by stakeholders to determine the preferred option.
8. Review of delivery against identified benefits by the preferred option.

The benefits have been reviewed and reconfirmed as part of the resubmission of the Initial Agreement in 2022. Due to the significance of the project and the changing economic, policy and healthcare landscape the key benefits will be continually reviewed at each stage of the business case, to ensure they are still those most vital to the success of the project.

2.6.2 Anchor Institution: Delivering Socio-economic Benefits

In the Lothian Strategic Development Framework, the organisation has made a commitment to acting as an Anchor Institution in the community, beyond impacting on lives through the way we provide care and treatment. The reprovision of the Edinburgh Cancer Centre will have a significant positive impact on the health and wellbeing of patients, and also on the wider economy, environment and communities.

Engaging with and influencing the wider social determinants of health such as housing, employment, income, place-making and sustainable transport systems is crucial to improvements in population health. A key element of this is recognising the NHS board can have a direct impact, through spending power, employment, and working with partners to maximise economic influence for social good. NHS Lothian will be looking for innovative building design and construction, clean energy and transport, and socially responsible employers throughout the supply chain. Engagement with health in all policies at local partnership, regional and national level will shape and deliver a health promoting environment across Lothian and the SCAN region.

The Scottish Government's National Performance Framework has been used to provide a structure for the identification, incorporation and assessment of these wider economic benefits to capture the benefit of the project to the communities and economy of South East Scotland. The benefits have also been considered in the context of Scottish Government plans and documents including: the *Scottish Government Economic Action Plan* (2019-20), the Infrastructure Investment Plan and *Exploring the Rationale for Infrastructure Investment* (December 2018). A number of key themes have emerged from these documents and learning from recent experience.

NHS Resilience - A reprovided ECC to modern standards will create resilience in Scotland's health system. Greater capacity to manage infection outbreaks safely would effectively minimise otherwise immensely disruptive and expensive impact on critical healthcare services and the wider economy.

Economic investment - Manufacturing opportunities for healthcare products severely restricted in supply arose during the recent pandemic, showing the key interaction between local economy and healthcare provision. Reprovision of the ECC will provide a series of new opportunities for local manufacturers and employers, with opportunities to build manufacturing capacity, employment and skills development opportunities, profitability and resilience in Scotland. This impact can be realised in small and medium sized businesses and social enterprises, as well the larger organisations that traditionally engage in construction projects of this scale.

Workforce opportunities – As well as the opportunities for employment in the supply chain described above, there is an impact on our NHS workforce to consider too. Providing care as close to the patient's home as possible will impact on health workers employment across the region, with opportunities to upskill colleagues across primary and secondary care. This will support effective wrap-around care closer to home and allow non-cancer specialists to pursue cancer interests and career development, including participating in research.

Clinical innovation, research and development - with a regional service optimising opportunities for research and innovation, the SCAN region is optimally placed to develop bench to bedside medicine in cancer. Access to world-leading research and data science synergies on the University of Edinburgh's cancer campus at WGH will encourage collaboration between the NHS, academia and industry. The potential for business innovation and associated intellectual property will in turn benefit the local economy and research institutions throughout the region.

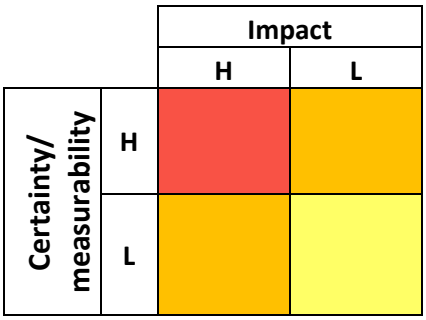
Carbon reduction for individuals – Providing care closer to home reduces the financial burden and carbon footprint of individual patients and families. Further digital and technological innovation will develop the potential for remote consultation and responsive management systems, reducing the reliance on travel for interaction with healthcare services.

Carbon reduction for society – The net zero carbon commitment made by Scottish Government in response to the climate emergency will be addressed through choices for design, construction and operation of the new ECC.

Progressive use of land and assets – Working with communities and third sector organisations to explore opening up the NHS estate for uses beyond healthcare.

2.6.3 Key Benefits

A summary of the key desired benefits from the project are detailed below, mapped to the investment objectives and both the NHS Scotland Strategic Priorities and the Scottish Government National Performance Framework. The mapping also indicates the impact and the certainty/ measurability of these benefits indicated using the colour matrix below:



These benefits cover the direct healthcare benefits, benefits to the project stakeholder, and wider socio-economic benefits in a net zero inclusive economy. Further detail behind each of the 13 key benefits is contained in Appendix 6.

Mapping of the benefits against investment objectives, and how the benefits look to both address Scotland's national outcomes and strategic priorities is outlined in figure 67.

Figure 67: Key benefits and mapping

#	Benefit	Related Investment Objective(s)	Mapping to SG Performance Framework National Outcome										Mapping to NHS Scotland Strategic Priorities				
			Children and Young People	Communities	Culture	Economy	Education	Environment	Fair Work and Business	Health	Human Rights	International	Poverty	Safe	Person Centred	Effective Quality of Care	Health of Population	Efficient: Value and Sustainability
1	Provision of **care closer to home** improves the **patient experience, reduces emissions, provides skilled employment opportunities in the region** and **reduces health inequalities**	Wide range of specialist cancer therapies available for the patients of South East Scotland	X			X	X		X	X	X		X		X	X	X	X
2	An **improved environment for staff** results in improved **staff recruitment, retention** and **wellbeing,** enhancing **economic participation**	- Building designs will provide appropriate facilities for clinical care that meet all required standards - Opportunities available to ensure recruitment and retention of specialist staff - Offering a range of education and training for professional development		X	X	X	X	X		X	X		?	X	X			X
3	A flexible building that can be adapted to safely manage and treat different patient cohorts provides improved **service resilience** and supports a **transformed service model**	Building designs will provide appropriate facilities for clinical care that meet all required standards	X			X			X	X				X		X	X	X
4	Increased ability to provide **precision medicine** through further collaboration with genomic services, building on University relationships and increasing clinical trials - resulting in **better patient outcomes and clinical innovation**	Wide range of specialist cancer therapies available for the patients of South East Scotland	X			X	X		X	X	X				X	X		X
5	Increased opportunities for **clinical trials** leading to **improved outcomes, equitable access, better patient** and **staff experience** and **closer links between the NHS, academia and industry**	- Integration of Clinical Research and Trials with Cancer Services - Opportunities available to ensure recruitment and retention of specialist staff				X	X		X	X		X	X		X	X	X	X
6	**Collocating services** helps streamline patient pathways and aids staff collaboration improving the **patient experience** and **patient outcomes,** and provides synergies and adjacencies that optimise opportunities for research and innovation	- Wide range of specialist cancer therapies available for the patients of South East Scotland - Integration of Clinical Research and Trials with Cancer Services		X		X	X		X	X						X		X
7	An **improved physical environment** for patients benefits **safety** and **the patient experience**	Building designs will provide appropriate facilities for clinical care that meet all required standards	X	X	X			X		X	X			X	X	X		X
8	More efficient buildings and reduced travel for treatment drives a **reduction in emissions**	Building designs will provide appropriate facilities for clinical care that meet all required standards		X		X				X							X	X
9	A national infrastructure project drives increased **skilled job opportunities** in the region from construction, R&D and clinical trials activity and associated innovative business growth	- Opportunities available to ensure recruitment and retention of specialist staff - Offering a range of education and training for professional development	X	X		X	X		X	X			X					X
10	An increase in **research and development** provides opportunities which **attract staff, drive economic innovation** and provide innovative treatments that **benefit patient experience and outcomes**	- Integration of Clinical Research and Trials with Cancer Services - Opportunities available to ensure recruitment and retention of specialist staff - Offering a range of education and training for professional development				X	X		X	X		X	X		X			X

#	Benefit	Related Investment Objective(s)	Mapping to SG Performance Framework National Outcome										Mapping to NHS Scotland Strategic Priorities				
			Children and Young People	Communities	Culture	Economy	Education	Environment	Fair Work and Business	Health	Human Rights	International	Poverty	Safe	Person Centred	Effective Quality of Care	Health of Population	Efficient: Value and Sustainability
11	Future proofed **sustainable service** with capacity to provide **equitable access to healthcare**	Increase service capacity and sustainability to meet demand		X		X			X	X	X				X	X	X	X
12	Redesigned patient pathways **improve the patient experience** and **clinical outcomes** and provide **unique opportunities for science and bench to bedside medicine.**	- Wide range of specialist cancer therapies available for the patients of South East Scotland - Integration of Clinical Research and Trials with Cancer Services	X			X			X	X	X				X	X		X
13	Ability to use **data driven innovation** to improve patient experience and outcomes through a more linked up data driven service model and provide **innovative business development opportunities**	- Wide range of specialist cancer therapies available for the patients of South East Scotland - Integration of Clinical Research and Trials with Cancer Services	X			X	X		X	X	X	X			X	X		X

A key feature of the benefits outlined above is their ability to be measured in order to assess achievement and to utilise them in the options appraisal process. Measurement criteria have been identified for each benefit and these have also been flagged where benefits will have a quantifiable financial benefit to allow appropriate incorporation of financial benefits in the financial options appraisal. This information is summarised below:

Figure 68: Measurement criteria for benefits

#	Benefit	Key Measures	Input to Financial Options Appraisal?
1	Provision of **care closer to home** improves the **patient experience, reduces emissions, provides skilled employment opportunities in the region** and **reduces health inequalities**	1. Change in number of remote consultations 2. Change in service provision throughout the region 3. Change in number and distance of patient journeys for treatment 4. Patient satisfaction audits before and after reprovision	YES
2	An **improved environment for staff** results in improved **staff recruitment, retention** and **wellbeing,** enhancing **economic participation**	1. Staff absence, turnover and bank and agency usage 2. Staff satisfaction audits before and after reprovision 3. Monitor environmental / facilities complaints before and after reprovision 4. SG National Indicator: Education/ Work place learning	YES
3	A flexible building that can be adapted to safely manage and treat different patient cohorts provides improved **service resilience** and supports a **transformed service model**	1. Diagnostic capacity and capability 2. Building flexibility (single rooms and adaptable wards)	NO
4	Increased ability to provide **precision medicine** through further collaboration with genomic services, building on University relationships and increasing clinical trials - resulting in **better patient outcomes and clinical innovation**	1. Specialities using genetic treatments and target cellular therapies 2. Offering access to novel treatment options through expansion of early phase trials programme 3. Change in patient outcomes for those treated using precision medicine 4. Improved inward investment in Scotland's Health and Scientific sectors	YES
5	Increased opportunities for **clinical trials** leading to **improved outcomes, equitable access, better patient** and **staff experience** and **closer links between the NHS, academia and industry**	1. Increase in number of clinical trials undertaken at ECC and across the region 2. Increase in number of NHS patients taking part in clinical trials 3. External investment received before and after reprovision	YES
6	**Collocating services** helps streamline patient pathways and aids staff collaboration improving the **patient experience** and **patient outcomes,** and provides synergies and	1. Impact on waiting times performance 2. Impact in pathways involving multiple disciplines	YES

#	Benefit	Key Measures	Input to Financial Options Appraisal?
	adjacencies that optimise opportunities for research and innovation		
7	An **improved physical environment** for patients benefits **safety** and **the patient experience**	1. Reduction in DATIX incidents 2. Patient satisfaction audits before and after reprovision 3. Compliance with HEI and other relevant standards 4. Comparative levels of Healthcare Associated Infection (HAI) – Infection Control Reports and Audits	YES
8	More efficient buildings and reduced travel for treatment drives a **reduction in emissions**	1. SG National Indicator: Economy/ Carbon footprint 2. SG National Indicator: Economy/ Greenhouse gas emissions 3. Reduction in building energy usage 4. Reduction in patient journeys	YES
9	A national infrastructure project drives increased **skilled job opportunities** in the region from construction, R&D and clinical trials activity and associated innovative business growth	1. SG National Indicator: Fair work and business/ Economic participation 2. Increase in skilled roles	YES
10	An increase in **research and development** provides opportunities which **attract staff, drive economic innovation** and provide innovative treatments that **benefit patient experience and outcomes**	1. SG National Indicator: Fair work and business/ High growth businesses 2. SG National Indicator: Fair work and business/ Innovative Businesses 3. SG National Indicator: Economy/ Spend on Research and Development 4. Cancer Services research portfolio 5. Reduction in premium rate pay and external providers in cancer care through an improved ability to develop, attract, and retain NHS staff	YES
11	Future proofed **sustainable service** with capacity to provide **equitable access to healthcare**	1. Impact on waiting times performance 2. Reduced number of appointment cancellations	NO
12	Redesigned patient pathways **improve the patient experience** and **clinical outcomes** and provide **unique opportunities for science and bench to bedside medicine**	1. Patient satisfaction audits before and after reprovision 2. Impact on length of stay and number of treatments delivered as in/ outpatient	YES
13	Ability to use **data driven innovation** to improve patient experience and outcomes through a more linked up data driven service model and provide **innovative business development opportunities**	1. Change in patient outcomes 2. Change in time to progress through patient pathway	YES

For the benefits where there are financial aspects that should be included in the financial options assessment flagged above – how these can be incorporated is detailed below. This will be included in the financial options appraisal as detailed in the Economic Case section of this document.

Figure 69: Financial benefits and measures

#	Benefit	Financial Benefit	Financial Measurement for inclusion in Economic Case
1	Provision of **care closer to home** improves the **patient experience, reduces emissions, provides skilled employment opportunities in the region** and **reduces health inequalities**	Financial benefits of delivering care closer to home (e.g. within SE region) and digitally. Highly skilled construction research and health sector employment opportunities throughout the region: 'Care Closer to Home' implies 'Work Closer to Home'.	Reduction in out of area charges. Reduction in cost to patient and relatives associated with need to regularly travel to access care. Increased tax base/ contributions to economy.
2	An **improved environment for staff** results in improved **staff recruitment, retention** and **wellbeing,** enhancing **economic participation**	A reduction in staff costs related to the use of Bank, Locum and Agency staff.	Staffing cost savings identified and included in the proposed staffing model(s). Reduction in maintenance costs.
4	Increased ability to provide **precision medicine** through further collaboration with genomic services, building on University relationships and increasing clinical trials - resulting in **better patient outcomes and clinical innovation**	Targeted treatments can lead to a reduction in the number and time of treatments required, improved patient outcomes reduce lost economic contributions. Ability to generate income and create employment in a range of sectors through development of product manufacture through partnership between NHS, Academia and Industry. Economic opportunities for local research institutions and businesses in clinical research and clinical trials activity, with potential to secure intellectual property.	Reduction in high costs drugs expenditure. Reduction in lost economic contributions through better patient outcomes. Income generation and wealth creation through innovation across NHS, Academic and Science/ Industrial sectors.
5	Increased opportunities for **clinical trials** leading to **improved outcomes, equitable access, better patient** and **staff experience** and **closer links between the NHS, academia and industry**	Clinical trials reduce drug costs as treatments are provided through the trials, improved patient outcomes reduce lost economic contributions for patients.	Reduction in drug costs. Staffing cost savings (improved retention) identified and included in the proposed staffing model(s).

#	Benefit	Financial Benefit	Financial Measurement for inclusion in Economic Case
		Innovative treatment development provides economic opportunities for local research institutions and businesses in clinical research and clinical trials activity, with potential to secure intellectual property.	Reduction in lost economic contributions through better patient outcomes. Income generation and wealth creation through innovation across NHS, Academic and Science/ Industrial sectors.
6	**Co-locating services** helps streamline patient pathways and aids staff collaboration improving the **patient experience** and **patient outcomes,** and provides synergies and adjacencies that optimise opportunities for research and innovation	Internal efficiencies from co-location (e.g. reduction in portering costs) and economies of scale from co-locating, reduction in costs associated with complaints, clinical risk, adverse events and poor patient outcomes.	Staffing cost savings identified and included in the proposed staffing model(s). Benefits to non-pays, equipment etc will be included in the revenue/ capital cost model(s). Reduction in costs associated with complaints, clinical risk, adverse events, and reduction in lost employment through better patient outcomes.
7	An **improved physical environment** for patients benefits **safety** and **the patient experience**	Reduced building maintenance costs due to improved condition of estate, reduction in costs associated with complaints, clinical risk and adverse events.	Reduction in maintenance and energy costs. Reduction in costs associated with complaints, clinical risk and adverse events, including in indemnity costs.
8	More efficient buildings and reduced travel for treatment drives a **reduction in emissions**	Reduced building maintenance costs due to improved condition of estate. Lower energy costs from reduced footprint and more efficient technologies.	Reduction in maintenance costs. Reduction in energy costs. Reduction in travel costs.
10	An increase in **research and development** provides opportunities which **attract staff, drive economic innovation** and provide innovative treatments that **benefit patient experience and outcomes**	Reduced staff costs through better retention and easier recruitment due to opportunities on offer. Innovative R&D provides economic opportunities for local research institutions and businesses in clinical research and clinical trials activity, with potential to secure intellectual property.	Staffing cost savings (improved retention) identified and included in the proposed staffing model(s). Reduction in lost economic contributions through better patient outcomes. Income generation and wealth creation through innovation across NHS,

#	Benefit	Financial Benefit	Financial Measurement for inclusion in Economic Case
			Academic and Science/ Industrial sectors.
12	Redesigned patient pathways **improve the patient experience** and **clinical outcomes** and provide **unique opportunities for science and bench to bedside medicine.**	Reducing the cost of treatment by providing it as daycase/outpatient and therefore reducing bed occupancy. See items above for other financial benefits associated with improved patient experience and outcomes.	Staffing cost savings identified and included in the proposed staffing model(s). See items above for measurement of benefits associated with improved patient experience and outcomes.
13	Ability to use **data driven innovation** to improve patient experience and outcomes through a more linked up data driven service model and provide **innovative business development opportunities**	Reducing the cost of treatment through relying on better data to support more efficient pathways. See items above for other financial benefits associated with improved patient experience and outcomes.	Staffing/ non-pays cost savings identified and included in the proposed staffing model(s). See items above for measurement of benefits associated with improved patient experience and outcomes.

The benefits outlined above have led to the development of a benefits register which is included in Appendix 6.

2.6.4 Benefits Realisation

The above sections detail the key benefits that could be derived from the redevelopment of the Edinburgh Cancer Centre both in the core business of NHS Boards and to support growth in a socially inclusive net zero economy. NHS Lothian is working towards the status of Anchor Institution.

We will continue to undertake our work in preventing ill-health through our services, but we also recognise that prevention needs to work beyond service provision. Engaging with and influencing the wider social determinants of health such as housing, employment, income, sustainable place-making and sustainable transport systems is crucial to population health improvement. A key element of this is recognising the LCHS can have a direct impact through our spending power, our providing jobs, and how we work with partners to maximise our economic influence for social good. The LCHS should seek to be a good neighbour, a good consumer, and a good employer by deploying its influence in purchasing and procurement, its assets and facilities, its significance as a regional employment hub to impact positively the health and wellbeing of the local population. The Sustainable Development Framework is a key component of this approach. This work comes under the banner of seeing LHCS as anchor institutions for our communities, where we impact on lives not just through the way we provide care and treatment but through our engagement with health in all policies at local partnership, regional and national level to shape and influence a health promoting environment across Lothian.

This work will be further developed through the OBC using a collaborative process working with stakeholders to refresh the benefits in light of the changing healthcare, economic and policy environment and in the context of the development of the preferred option.

Key next steps at OBC will include;

- Alignment with the benefits identified through the Lothian Strategic Development Framework and Anchor Institution status
- NHS Lothian's Quantification of financial benefits and inclusion within the financial options appraisal
- Quantification or qualitative assessment of benefits to confirm measurement techniques and baseline values
- Weighting and scoring of benefits as part of the options appraisal process

NHS Lothian and the University of Edinburgh have begun to collaborate on shared learning around quantification of economic benefits. NHS Lothian is eager to work collaboratively to focus attention on those areas with the biggest impact/benefit. The development of a means by which to measure socially inclusive economic benefits and incorporate these into business cases is in its infancy and we will continue to engage and work with the Scottish Government and Health Facilities Scotland (HFS) to develop a consistent process for application across all NHS Lothian business cases. Support from the Scottish Government in developing best practice to quantify these benefits will be welcome.

2.7 Strategic Risks

A Stakeholder Risk Workshop on 12 August 2019 facilitated the development of an initial Risk Register which is located at Appendix 7. Key strategic risks emerging that may undermine the realisation of benefits and the achievement of the investment objectives are summarised below.

These are described thematically alongside potential safeguards and actions in place to mitigate against these:

Figure 70: Key risks

Theme	Risk	Safeguard
Workforce	Availability of workforce across various professional groups and distributed across the region	Clearly outline the workforce required identifying current challenges and considering sustainability of current services across the South East region. Review skill mix and staff roles to adapt to known workforce shortages. Develop a comprehensive risk assessed workforce plan for the South East region as part of Business Case. Work with SG to develop an integrated plan for incremental growth of the cancer workforce, in a way that benefits all Scottish centres.
	Potential issues with training pipeline (e.g. increased places required and timeframe for achieving desired staffing levels) Risk that attractive jobs in new Edinburgh cancer Centre have the potential to de-stabilise services elsewhere in the SCAN region (and potentially across Scotland)	Provide staff training and education for the region to focus on workforce development and role redesign. Provide employment opportunities across the region - provide services closer to home. Plan recruitment on local, regional, national and international levels so as to minimise de-stabilisation.
Funding	Capital funding not approved by SG	Initial Agreement clearly articulating the wide reaching benefits of a world class cancer facility in Edinburgh. Transformed ways of working to show best use of public monies.
	Revenue funding not approved by NHS Lothian and Regional Partners	Transformed services based on most efficient use of workforce to demonstrate value for money – affordability a key

Theme	Risk	Safeguard
	Reduced funding in the Third Sector impacting on delivery of patient holistic approach	consideration. Continue to develop relationships with Third Sector partners to understand financial constraints as proposal develops.
Capacity	Rapidly growing and ageing population, increase in cancer incidence and increase in treatment options exacerbating service pressures	Robust data analysis undertaken to project future demand. Accommodation designed flexibly to adapt to changing patient needs.
Regional Commitment	Partner NHS Boards not in agreement with the preferred option or unable to quantify their future requirements impacting upon the scope and success of a regional service delivery model	Continuous dialogue with partners to ensure full discussion of the plans proposed and alignment with individual Boards' strategic visions. Develop collaborative service models to enable patient access to high quality care across the region.
Capital Projects	Lessons from other Capital Projects not considered at appropriate stage in the process	Assurance processes in place nationally (NHS Assure) and locally in NHS Lothian. Lessons learned reviewed and disseminated through LCIG and Capital Planning, implemented across projects.

The Risk Register is attached at Appendix 7 and will be updated for the project at OBC stage.

2.8 Constraints

There are a number of constraints on both the delivery of the clinical model and delivery of the programme.

The key constraints to be considered are:

- **Financial** - Availability of sufficient capital, revenue, fundraising and Third Sector funding to deliver the transformed vision.

- **Timeframe for proposal** – Delivery within a reasonable timeframe is essential to ensure that the need for change and associated benefits are realised; the demand for services continues to grow making mitigation of ongoing risks connected with existing infrastructure increasingly challenging.

- **Regional Collaboration** - Collaborative regional working is required to agree on service requirements and delivery. This will be addressed through the existing SCAN network; strong collaboration to date is evidenced through the stakeholder engagement described in the Economic Case chapter, and participation in the 2022 regional service model review.

- **Regional/ National Workforce Availability** – Availability of specialist staff across the region for all of the services that contribute to the cancer patients pathway will be required. Development of robust workforce plans to address current and forecast pressures will be essential to ensure robust and sustainable services can be provided across the South East region, and nationally.

- **Briefing** –the project will develop clear Clinical and Technical briefing upon approval of this IA and, crucially, in advance of any design activity taking place. Once complete and endorsed by the Programme Board, the briefing will help to control development of the project within agreed parameters. The technical brief will make it clear that all current and appropriate healthcare guidance should be followed unless specific derogations are proposed and signed-off by the Programme Board.

- **Quality** – Quality constraints and expectations will be referenced within the project's Clinical and Technical briefs. The project will also be subject to Key Stage Assurance Reviews where recommendations will be made and actions agreed to manage and control the process and eventual outcome.

- **Sustainability** – The project will require to demonstrate net zero carbon credentials. Sustainability criteria for the project will be developed and confirmed within the Technical Brief.

- **Site** – The preferred option is likely to involve significant works at the WGH. Given that this is a live site, there will be multiple site constraints affecting safe delivery of the project together with operational continuity of the site. In addition, given the congested nature of the WGH and the agreed masterplan framework, the facilities will be constrained in respect to agreed development zones.

- **Procurement** – given the size and complexity of the project, procurement options are likely to be constrained. Procurement options are outlined within the Commercial Case (refer to Section 4).

- **Statutory** – The project will be subject to statutory consents (planning and building warrant).

- **Governance** – The project will be subject to internal and external governance monitoring and approvals. Refer to the Management Case (Section 6) for further details in respect to project governance.

2.9 Project Dependencies

2.9.1 Site Dependencies

The WGH is a congested site following years of reactive development, and any new-build options under consideration at the WGH are likely to involve a series of enabling works to generate a suitable site for development.

A significant area of the site requires to be cleared, and to meet the anticipated timescale for construction on ECC to commence late 2026, the **Initial Agreement for the Western General Hospital ECC Pathway – Advanced Demolitions and Decant** has been progressed ahead of this proposal.

With the Cancer Centre potentially being the first significant development on the site, it will be important to ensure that the **WGH Energy Infrastructure Programme, now at Outline Business Case**, is able to support this major development in respect to capacity of supplies and primary service nodes/connection points. The Energy Centre dating from 1968 has reached the end of normal serviceable life and is not in line with legal requirements. In tandem with the Energy Infrastructure improvements, there will also be associated non energy infrastructure works associated with the projects / phases planned for the wider site development.

2.9.2 Clinical Model Dependencies

The success of the proposed clinical model is dependent on the WGH remaining a viable 'hot' site with acute receiving, medical, surgical and critical care.

A single integrated WGH **Pharmacy** Department has been included in the scope of this proposal as it is deemed fundamental to support a re-provided Cancer Centre. Further information on this service model is included at Appendix 8.

Increased and improved **Critical Care** capacity for the wider WGH is subject to a separate business case. This is not an aspect that can wait until the development of a re-provided Cancer Centre as there are developments required to the current critical care unit to meet compliance standards, and the Initial Agreement was submitted to the June 2022 Capital Investment Group. The proposal will support cancer, medical and high volume surgical specialities (Colorectal, Urology & Breast) already on the site. The lessons from the 2015 HIS review of the Beatson and current planning and clinical concerns expressed about Velindre in Wales have reinforced the essential part of the Cancer Centre being on a hot acute site with a viable critical care unit.

Diagnostic services that underpin the cancer clinical model are provided by **Laboratories, Radiology** and **Nuclear Medicine Physics**. The proposed development of a business case for these services to support the whole WGH site, not just cancer, have been described in section 3.2.2.1.

2.9.3 Regional scope

Decentralised model for Radiotherapy – the Economic Case identifies an option for a 'satellite' radiotherapy unit in the South East region to be developed and appraised in order to confirm the clinical model and the brief for ECC.

Regional Agreement – the preferred option will ongoing refresh and validation of the Regional Cancer Service model. Any changes will be dependent upon the availability of resources – specialist workforce, funding, and require to be approved through the regional planning structure. Potentially investment in infrastructure within NHS Borders, NHS Dumfries and Galloway and NHS Fife could be required.

3 The Economic Case

This section identifies the preferred strategic and service solutions suitable for further assessment at Outline Business Case stage. These are on the basis of option identification and assessments in line with the Scottish Capital Investment Manual through the course of this project. At all stages, NHS Lothian has engaged with the wide range of stakeholders in cancer services to ensure that they are informed and involved in the agreement of the Clinical Model and in the consideration of the options for delivering it.

Work in 2018-20 developed a service model, schedule of accommodation and design statement for the ECC, and identified options for delivering this project.

The work in 2021/22 to revisit the regional clinical model, incorporating lessons from Covid-19 and further developments in technology and treatment, has built on the earlier work and revisited the options for ECC.

The preferred way forward described at the end of this section reflects the views taken from extensive stakeholder engagement.

3.1 Engagement with Stakeholders

This section provides details of the stakeholder engagement that has taken place confirming support for the proposal. Engagement events from 2017 to 2022 included:

- Site visits
- Regional Engagement
- Clinical Workshops
- Experience Based Co-Design
- Place Brief
- Branding
- Engagement with Young People
- Third Sector Engagement
- Integrated Impact Assessment
- Design Statement
- Options Assessments

A full list of stakeholders involved to date is available in Appendix 3.

3.1.1 Engagement Process and Activities

The Scottish Government Health Directorate guidance, CEL 4 (2010) *'Informing, Engaging and Consulting People in Developing Health and Community Care Services'* provides a step-by-step guide through the process of informing, engaging and consulting with the public in service change proposals.

It specifies that the public involvement process should be applied in a realistic, manageable and proportionate way to any service development or change and recommends regular communication with stakeholders. It also defined the role of what was the Scottish Health Council (SHC) in ensuring NHS Boards meet their patient focus and public involvement responsibilities whilst supporting them in doing so. This role now sits with Community Engagement under Healthcare Improvement Scotland.

The NHS Lothian Quality Strategy 2018 – 2023 states a commitment to provide a greater focus on the needs and wishes of patients and population in improvement work, and to understand what matters to NHS Lothian staff.

In order to meet all of these obligations, in 2018 NHS Lothian employed a Public Involvement and Engagement Manager to support various streams of work with development of a new Cancer Centre being one of the key priorities.

Initial contact was made with the SHC in August 2018 which included discussion of the approach to involving, engaging and consulting with stakeholders throughout the process of Business Case development, beginning with engagement at the earliest possible stage as the proposal is developed.

NHS Lothian sought advice from the Community Engagement team at Healthcare Improvement Scotland in 2021 on consultation in final preparation for submission of this IA in 2022. We were advised that if there were no fundamental changes to the service model then it would be proportionate to inform stakeholders of the updated re-submission of the IA to the Scottish Government, including managing expectations of revised timescales. Engagement will then restart with a refresh of the stakeholders to be involved, engaged and consulted, once approval to proceed to OBC has been secured.

The stakeholder engagement process for the ECC proposal is described below.

3.1.1.1 Regional Engagement

From the outset of scoping this reprovision, NHS Lothian committed to work alongside the regional partners Boards to ensure that there was effective communication and collaboration.

The level of engagement to date gives assurance that this proposal accurately articulates an agreed strategic regional position on the future of cancer service provision for the patients of South East Scotland. The detail and implementation of a future regional service delivery model will be developed jointly as the proposal progresses to OBC.

Early meetings were held with all of the Regional Health Boards to agree specified Key Principles which underpin the content of the Cancer Centre proposal. It was discussed and agreed at these and subsequent meetings that equity of service across the region was of utmost importance to ensure a consistent, high quality patient experience.

A robust and interactive communication process has been vital in ensuring that the views of all of Boards have been considered and included. Representatives from each Board have attended the described engagement activities, Cancer Capital Programme Board and Service Model Review. They have responsibility for communication and dissemination of information within their individual Boards to ensure that feedback from a wide range of stakeholders can be incorporated in the proposals, and to ensure that the leaders of that Board are assured of this.

As the proposal continues to develop, the views of stakeholders across Lothian and the SCAN Region will continue to be sought in order to influence and support the development of the proposal.

3.1.1.2 Clinical Workshops

A Clinical Model to underpin the development of a new Cancer Centre was developed through a series of clinical workshops held in October 2018.

Workshops were held for each of the following areas which facilitated meaningful discussion and input from a wide range of stakeholders;

- Radiotherapy
- Inpatient and Cancer Assessment Unit
- Breast Services
- Outpatient and Daycase
- Haematology
- Clinical Trials

During these events, representatives from NHS Borders and NHS Fife worked alongside NHS Lothian service teams including Consultants, nursing staff, AHPs and service management to design a proposed Clinical Service Model.

Discussion focused around the 'fork in the road' strategic questions/decisions that the group felt should be considered for inclusion within the IA. The workshops also generated the list of '*Principles, Dependencies and Assumptions'* - critical elements which will underpin the proposal for a new Cancer Centre.

The Clinical Model was discussed and agreed initially by the Cancer Clinical Management Team (CMT) then by the Cancer Capital Programme Board (CCPB) in December 2019. This was reviewed again in 2020 ahead of submission of the IA later that year.

This Clinical Service Model was revisited in December to March 2022 with the support of healthcare planners. The outcome was a confirmation of the service model principles, supported by the cancer clinical management team, senior management and strategic planning from Borders, Dumfries and Galloway, Fife and Lothian, plus regional planning and workforce planning.

The proposed Clinical Model and '*Principles, Dependencies and Assumptions'* are included in section 3.2.1 below.

3.1.1.3 Experience Based Co-Design (EBCD)

Alongside the clinical sessions, in October 2018, a comprehensive programme of wider stakeholder engagement began based on an adapted model of Experience Based Co-Design (EBCD) https://www.pointofcarefoundation.org.uk/resource/experience-based-co-design-ebcd-toolkit/

The use of this model is approved and encouraged by Healthcare Improvement Scotland as an effective means of ensuring that patients and staff can influence decisions throughout the design process.

The EBCD process follows the principles of '*What matters to you?*' and ensures a clear focus on relevant patient and staff experience.

The first stage of the process involved patients and frontline staff being interviewed about what they like/would keep and would change about the current cancer services. The themes from these interviews were collected together in video format to become the starting point for discussions on future design principles for the new cancer centre.

The video has provided helpful insights into how patients experience services and how their future experience could be improved and can be seen here: https://vimeo.com/318729227.

The video was shown to staff and patients during an Experience Based Co-Design Workshop in January 2019. This event brought together patients, carers, charity representatives and staff (including representation from the Regional Boards) to look more closely at the emerging themes and work on common principles of design to be incorporated into the development of the new centre.

Key themes emerging from the interviews were:

- Access
- Holistic Wellbeing
- Design Improvements
- Futureproofing

These provided a starting point for discussions on future design principles for the new cancer centre which were further developed at a second Experience Based Co-Design workshop in March 2019. This event was attended by patients, carers, charity representatives and staff (including representatives from the Regional Boards) as well as an advisor from the SHC.

The workshop included an explanation and discussion of the proposed Cancer Centre Clinical model and an opportunity for non-clinical stakeholders to have their views included. The representative from the SHC provided feedback that it '*was a useful opportunity for people to be introduced to the complexities of the different services that are delivered as part of the cancer treatment centre'* and that

'people were encouraged to contribute to the discussions and ideas and thoughts that were shared or discussed were noted'.

Discussion in the workshop then focused around further developing the themes identified above into design principles. These are available at Appendix 9 and have fed into the production of a Design Statement. The Design Statement had been produced as part of the NHS Scotland Design Assessment Process (NDAP) process. NHS Lothian is currently working with HFS to achieve 'supported' status for this Initial Agreement. This process is expected to conclude in the summer of 2022 prior to submission of this IA to Scottish Government Capital Investment Group. A completed Design Statement will be available upon request.

The EBCD process adopted for the ECC reprovision project was commended by Healthcare Improvement Scotland and promoted as an exemplar of stakeholder engagement. Figure 71 captures the general themes which emerged from the engagement work and describes how NHS Lothian are responding to these.

The work of the co-design groups provided key discussion points for the Achieving Excellence Design Evaluation Toolkit (AEDET) and NDAP processes which began with a workshop in June 2019. These ongoing processes will be integral to design development for OBC.

Almost two years following the start of the initial EBCD stakeholder engagement process, we sought additional patient views as an assurance that the key themes identified at the start of the process remain valid.

We asked '*What could be done to improve/make a difference to your experience within Cancer Services'*, and patients responded with;

- *Purpose built space, fresh, clean environment*
- *Variety of seating areas*
- *Building facade being important*
- *How the building looks and feels instils confidence and makes you feel more relaxed*
- *Good signposting – bad signposting adds to patient stress levels*
- *Waiting areas/spaces. Having the option to sit in area where more private/quiet or be social with other patients*

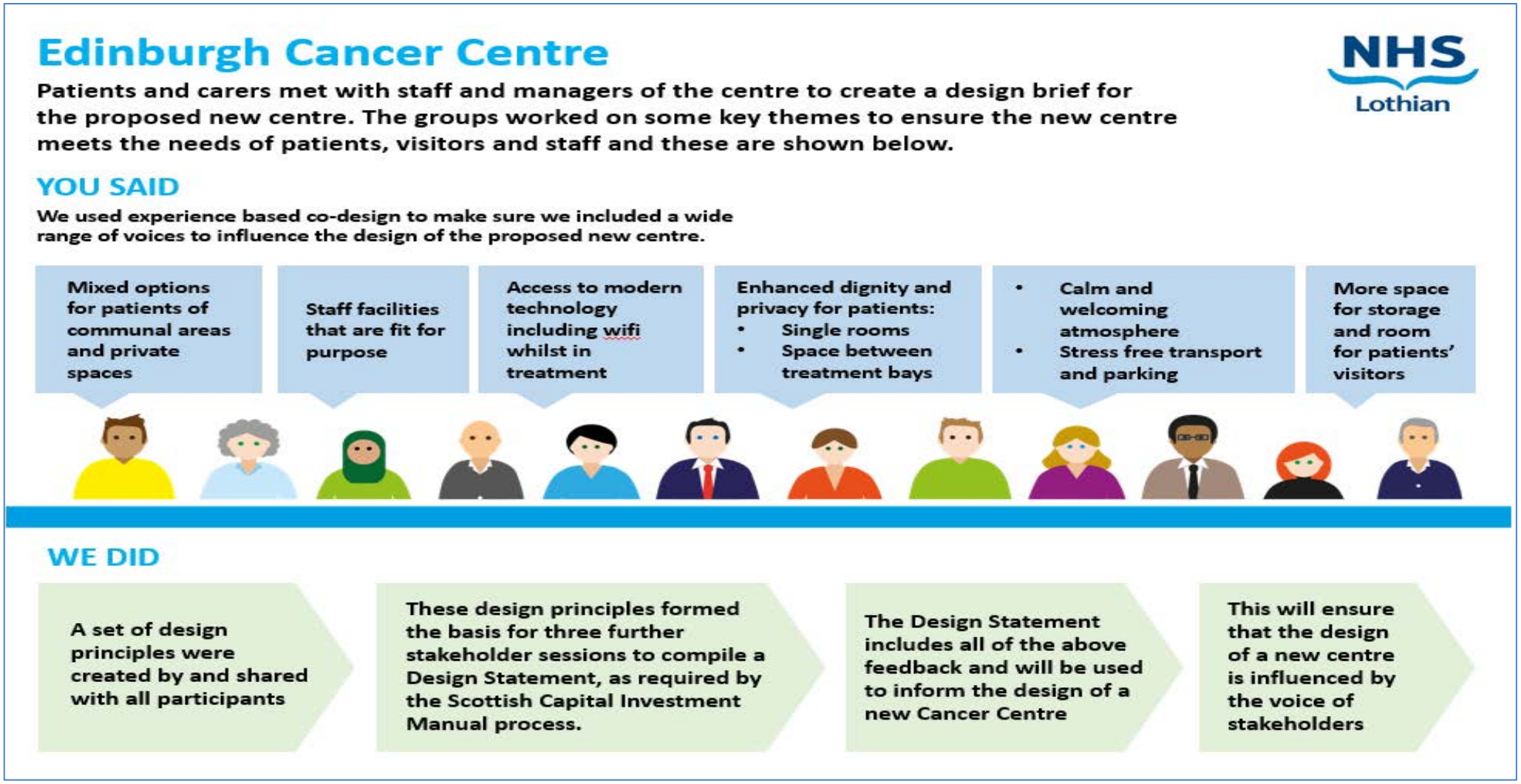
This feedback re-affirms the themes as captured within the Design Statement, that this proposal will seek to address, and provides reassurance that what matters to cancer patients has not changed since the earlier engagement work.

3.1.1.4 Place Brief

The Place Brief is an integral part of the council planning process and was developed by CEC and NHS Lothian in 2019 following a pulic consultation exercise. The exercise which comprised of a series of drop-in events for patients, staff and members of the public, was held in November 2018 and were attended by a total of 136 people.

Surveys were also distributed which asked specific questions on the layout of the Western General Hospital site. 159 of these were completed and views were also given through social media using the hashtag #MySayWGH.

Figure 71: Engagement process outcomes



3.1.1.5 Branding

From January to March 2019, stakeholders were consulted on the brand for the new Cancer Centre, including a name and graphic design upon which the brand will be based. This work by Morton Ward included brand review, research, stakeholder engagement, positioning strategy, naming and creative brief.

Engagement activities included:

1) Branding Inception workshop held on 17th January 2019
2) Range of one to one stakeholder interviews
3) Discussion of name options with several small focus groups to gauge opinion

Brand identity concepts were developed for four proposed names and presented to the Cancer Capital Programme Board in March 2019 then tested by the following groups:

- Patient cohort - patients who were involved in the EBCD process;
- Regional patients contacted by SCAN public involvement managers;
- Staff cohort including regional NHS staff;
- Cancer clinical management team;
- WGH Hospital Management Group

Following feedback, 'Edinburgh Cancer Centre' was confirmed as the preferred name. This name was then attached to four graphic design evolutions which were distributed to the same stakeholder groups for further feedback.

The final result of this process is below:

Figure 72: Edinburgh Cancer Centre graphic design

It is envisaged that both the name and graphic design will be used across the SCAN region as a marker of high quality patient service and experience which, as the brand is developed, patients and the public will become more familiar with. A St John's Hospital version is already implemented for the services delivered under the ECC brand in West Lothian.

3.1.1.6 Engagement with Young People

This proposal has been discussed with the NHS Lothian Young People's Panel as part of the engagement process. The word cloud below summarises how they would like to feel on arrival at the cancer centre.

Figure 73: NHS Lothian Young People's Panel engagement

Many of these aspirations are shared by the wider patient stakeholder group and will be taken into consideration as the building design progresses.

3.1.1.7 Third Sector Engagement

Re-provision of the Edinburgh Cancer Centre is an opportunity to deliver services with a patient focused, holistic approach and to meet the aspiration of the refreshed Scottish Government Cancer Strategy '*Beating Cancer: Ambition and Action (2016)*'[35] around '*best care and support for all people with and beyond cancer*'[36].

There are a wide range of Third Sector partners who currently provide vital support services for cancer patients. It is the ambition of the proposal that this support is strengthened in order to provide a holistic patient experience.

NHS Lothian Third Sector Voluntary Services is currently undertaking a mapping exercise of 3rd sector service provision to cancer patients across the South East region. The outputs of this exercise will be used to engage with Third Sector Partners (existing and potential future) to plan a regionally co-ordinated approach to Third Sector service provision with the overall aim of enhancing the patient experience.

This work will be further developed and the outcomes articulated as part of the OBC.

3.1.1.8 Integrated Impact Assessment (IIA)

It is vital in developing any proposal to understand how the needs of different groups in the population may differ. Assessing impact is an important part of NHS Lothian's decision making process and the IIA is a mechanism which enables the needs of different groups to be considered.

An Integrated Impact Assessment (IIA) stakeholder event in relation to the Edinburgh Cancer Centre Capital Redevelopment was held on 28th November 2019.

[35] Refreshed in April 2020: An update: achievements, new action and testing change
[36] Beating Cancer: Ambition and Action (2016), refreshed in April 2020 p.13

NHS Lothian is committed to 3 core objectives in relation to equality and rights:

- To plan services and policies which promote equality of opportunity; eliminate discrimination and harassment; and promote good relations between those with protected characteristics and those with none.
- To address broader inequalities in line with the national 'Build Back Fairer' agenda. This means we want to ensure that policies meet the needs of all people including children and young people, especially those from population groups that are known to have poorer outcomes.
- To identify and address wider impacts on poverty, health and health inequalities in our policies, plans and strategies. For example employment, education, transport, the built environment, purchasing policies, public safety, waste disposal all have wider impacts on people's health, wellbeing and life experience.

The session consisted of detailed discussion amongst the stakeholder group to critically consider the possible impacts (both positive and negative) of the ECC reprovision on different groups within the community. Following this, the group discussed and agreed a summary of the impacts identified and made some recommendations to be included within a detailed action plan and built into the implementation of the proposal.

The action plan is available at Appendix 10.

Further IIA events will take place as the OBC progresses and service models are more clearly defined to ensure the needs of different population groups are addressed.

3.1.1.9 Options Assessments

The first workshop to appraise the potential options identified for the proposed Clinical Model for Cancer Services was held in April 2019. The event was attended by 55 stakeholders including patients, staff, charity representatives, clinicians and managers from across NHS Lothian and the Regional Boards.

Options were assessed at a high level in line with Scottish Government Capital Investment Manual (SCIM) guidance relevant to this IA stage of the business case process. The process for this workshop is described in the Options Identification section below.

The refreshed Regional Service Model Review in 2022 presented three options for the clinical model that were assessed by the Steering Group and reported to the Cancer Capital Programme Board. Stakeholders involved in this options assessment included the cancer clinical management team, senior management and strategic planning from the four SCAN Boards, plus regional planning and workforce planning.

This second option appraisal has learned from and built on the conclusions of the extensive engagement in 2019, and reinforced with partners across the SCAN region the preferred way forward for ECC reprovision.

3.1.1.10 Summary of Engagement with Stakeholders

The table below summarises the stakeholders impacted by this proposal and the details of the engagement that has taken place with them to date and notes their support for this proposal.

Figure 74: Summary of engagement with stakeholders

Stakeholder Group (representatives)	Engagement that has taken place	Confirmed support for the proposal
Patients/ Service users (current and previous ECC patients)	Participation in the EBCD process, Branding Consultation, Options Assessment, AEDET, NDAP, Design Statement and IIA.	Feedback has been incorporated into the overall proposal for the Cancer Centre through incorporation into the proposed Clinical Model and the Design Statement.
General Public (public consultation, WGH site neighbours)	Public consultation events for the Place Brief, and future participation in planning processes.	Outcomes from the Place Brief event have been incorporated into the future vision for the Western General Hospital site overall. The level of support from the general public for this proposal is positive, demonstrated through feedback from patients in the EBCD video and during the Options Assessment event.
ECC Staff (clinical, multidisciplinary, non-clinical, and operational management)	Participation in the Service Model Review, EBCD process, Branding Consultation, Options Assessment, AEDET, NDAP, Design Statement and IIA.	Feedback has been incorporated into the overall proposal for the Cancer Centre through incorporation into the proposed Clinical Model and the Design Statement.
Other WGH staff (e.g. pharmacy, radiology, laboratories, critical care, facilities)	Consultation and discussion on what support for the ECC is required and the likely impact of service growth and change on their service.	Feedback has been incorporated into the overall proposal for the Cancer Centre through incorporation into the proposed Clinical Model and the Design Statement. Diagnostic Services outwith the ECC are covered in section 3.2.2 with relationships and adjacencies to be incorporated into the final design.
Regional Stakeholders (patients treated in and staff working in other SCAN Boards)	Involvement has included participation in the Service Model Review, Clinical Workshops, EBCD process, Branding Consultation, Options Assessment, Design Statement, AEDET, NDAP and IIA.	Support for the proposal has come through continuous participation in the engagement activities listed. *Letters have been requested of NHS Borders, NHS Dumfries and Galloway and NHS Fife in support of this IA proposal.*
University of Edinburgh & Cancer Research UK Scotland Centre	Presentation to CRUK Governance Board in 2019 with University, Academic and patient representatives in attendance.	Support has been formalised through the creation of a joint management post to support greater integration, strategic alignment, and through academic representation on the Cancer Capital Programme Board.
Third Sector	Branding Consultation, Options Assessment, Design Statement and IIA.	Continued close engagement with Third Sector partners is vital as the proposal develops. The output of a regional Third Sector audit will inform the next steps of engagement with these stakeholders for OBC.
Healthcare Improvement	Representatives have been involved from the	A letter received on 28th August 2020 confirmed the view of HIS that this proposal does not meet the

Stakeholder Group (representatives)	Engagement that has taken place	Confirmed support for the proposal
Scotland Community Engagement *Formerly Scottish Health Council*	beginning of this programme. As well as attendance at workshops, regular meetings have been held to discuss best practice for engagement and next steps as the proposal has progressed.	threshold for 'major service change', and that HIS consider the approach to engagement to be proportionate. An email received on 19th January 2022 advised that it would be proportionate to inform stakeholders of the update and progress on re-submission of the IA, and to restart engagement with a refresh of the stakeholder analysis for the development of the OBC.

3.2 Service Change Proposals

The '*Principles, Assumptions and Dependencies*' and the resulting Clinical Model emerged from clinical workshops and have been discussed and ratified by key stakeholders through the engagement processes described above.

Figure 75: Principles, assumptions and dependencies

Guiding Principles
All key partners will develop strategies throughout the life cycle of this programme that support delivery of the vision.
As a world class centre, a range of specialist cancer therapies will be delivered.
Care should be delivered closer to home wherever clinically appropriate and financially viable.
Patient experience, service model and quality of care should be consistent across all regional centres delivering cancer services.
There will be a patient focused/ holistic approach to the design of a transformed regional service.
Service and building designs will optimise efficiencies and new technologies.
The service design will be aligned with SG national cancer strategies.
We will lead innovation ensuring Cancer Research is integral to core services across the region.
We will learn lessons from similar developments in the UK and beyond to ensure that the above vision can be realised.
Assumptions
Workforce challenges will continue across the UK in line with the present position. The workforce plan must be bold and ambitious offering rewarding and well supported careers to support service delivery across the region.
Demand for Cancer Services will continue to grow at current rates; anything built must be future proofed.
There will be no long term structural changes to SCAN Regional Health Economy, and NHS Tayside service provision will ultimately revert to the previous model.
All necessary supporting infrastructure will be effectively planned and in place within planning time horizon.
Subject specific expertise will inform the future service model based on reasoned assumptions and horizon scanning.
Essential state of the art equipment and co-dependent services necessary to support regional treatment delivery will be available on WGH site and/or in the partner boards.
The WGH will remain a 'hot site'[37] with a fully viable ITU.
Patients requiring advanced therapeutics will be cared for in a cellular therapies unit which will include capacity for Early Phase Trials.

[37] A 'hot site' is a description for an acute receiving hospital with surgical and medical facilities and critical care.

The design of all services will be evidence based, data driven and linked to measurable outcomes.

These principles and assumptions were used to generate a long list of options for cancer centre re-provision.

3.2.1 Proposed Clinical Model

This is a South East Scotland Development hosted and led by NHS Lothian on behalf of the SCAN region. The key principles of Person Centred, Safe, Effective Quality of Care, Value and Sustainability, and Health of the Population have been considered throughout.

Re-provision of the Edinburgh Cancer Centre is an opportunity to transform the way cancer services are delivered and to transform patient pathways. It is also an opportunity to deliver improved services with a patient focused, holistic approach, with improved access to personalised targeted therapies.

The opportunities for improvement are in the transformational re-design of services resulting in optimum patient experience and outcomes, improved efficiency of service and better staff experience while realising the economic and financial benefits described elsewhere in this case.

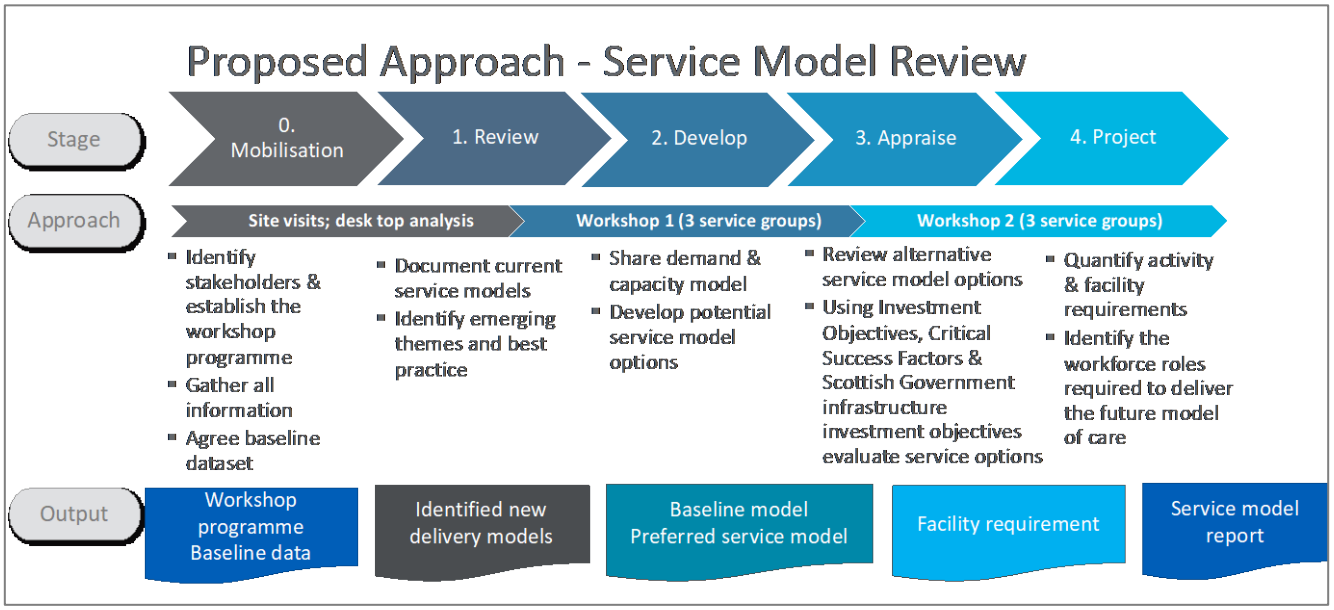
The planning horizon of ten years for the centre provides an adequate timeframe to develop services, workforce and technology plans in order to gain short and medium term benefits as well as ensure that when the new centre opens its doors the necessary service and research infrastructure and workforce are in place.

3.2.1.1 Approach

NHS Lothian and the other SCAN boards worked with Healthcare Planners Buchan + Associates in 2021-22 to revisit earlier work on the clinical service model and refresh the proposal that was submitted in the 2020 version of the IA. This allowed for review of activity data against current pathways, incorporating lessons learned during the pandemic and the planning for service recovery now.

The approach to the service model review with a wide range of stakeholders is depicted in figure 76.

Figure 76: Approach



Workshops were scheduled to meet with clinical teams and evaluate different service delivery models for:

- Planned Cancer Services
- Unplanned Care
- Radiotherapy
- Breast Surgery
- Haematology

Evidence from national and international best practice and the collective experience of the regional team were used to establish the future model of care for each area of service delivery.

3.2.1.2 Activity Analysis

The activity analysis and projections included within each sub-section are based on a 2019 baseline dataset, this being the last period before activity and reporting were impacted by Covid-19. . A range of data have been used including:

- TRAK Admitted patient care and outpatient data;
- Chemocare dataset;
- Radiotherapy dataset;
- Clinical trials dataset; and
- Theatre dataset;

The following assumptions were agreed on how the baseline activity would change and applied to all datasets within each area of service delivery.

- Demographic growth by age and gender and Health Board by year to 2032;
- Tumour site specific growth to 2027 based on ISD tumour site specific growth to 2027; and
- Additional tumour site growth based on the British Journal of Cancer to 2032.

The following table lists the key outputs agreed with clinical and regional stakeholders for the planning of the future service model. The full report is as Appendix 11.

Figure 77: Summary of key changes for the proposed service model

Service area	Key changed proposed
Planned Cancer Services: planned oncology inpatients and day case (SACT delivery and supportive therapies) and outpatients (Oncology and Haematology);	▪ An increase in planned care delivered at sites closest to home e.g. increased provision at St John's, note change in service delivery model partially implemented in 2019; ▪ Increased provision of planned care within non-acute/community-based locations e.g. supportive therapies; some cancer treatments delivered at East Lothian and Midlothian Community Hospitals; and ▪ Potential for shift of planned oncology inpatient care to NHS Fife.

Unplanned Care: unplanned admissions including assessment and treatment and Palliative and End of Life Care (P&EOLC);	▪ Increased unplanned care delivered at sites closest to home e.g. increased provision at St John's, note change in service partially implemented in 2019; ▪ Early discharge to either home boards (regional patients) or non-cancer specialist beds at an earlier point within pathway; and ▪ Early identification of P&EOLC patients to ensure timely access to the most appropriate service for them.
Radiotherapy: planning and delivery of radiotherapy and brachytherapy;	▪ Inclusion of dedicated research capacity; and ▪ Specific tumour site treatment changes driven by enhancements in technology and treatments available.
Breast Services: outpatients, day case and inpatient surgery, screening	▪ Repatriation of surgery for patients from NHS Fife, NHS Forth Valley and NHS Borders whose surgical need has been identified through the Breast screening programme, to their home Board. ▪ Consideration of the co-location of screening and symptomatic services on one site
Haematology: planned and unplanned inpatient and day case including SACT and supportive therapies. Acute assessment is undertaken within a shared Cancer Assessment Unit.	▪ Change to day case to reflect changes made since 2019.

3.2.1.3 Summary Requirements

The table below summarises the requirements for the new Edinburgh Cancer Centre;

Figure 78: Total requirements – ECC

Specialty	Facility	Current in 2022	2027 Demand Projection	2032 Demand Projection
Assessment spaces				
Oncology/Haematology	**Assessment Spaces**	**16**	**12**	**14**
Beds				
Oncology	Unplanned Inpatient beds	47	47	51
	Planned Inpatient beds	22	21	22
Total Oncology Inpatient beds		69	68	73
Total Haematology Inpatient Beds		19	30	35
Breast Surgery Inpatient Beds		3	5	6
Total Inpatient beds		**91**	**103**	**114**
Chairs				
Oncology	SACT Chairs		42	44

	Supportive Therapy Chairs		9	10
	Total Chairs	31	51	54
Haematology	SACT Chairs		11	12
	Supportive Therapy Chairs		13	15
	Total Chairs	14 (capacity to 28)	24	27
Total Chairs		**45**	**75**	**81**
Clinics				
Oncology/Haematology	Outpatient rooms	19	19	25
Breast Surgery		11	10	11
Radiotherapy		3	4	5
Total Outpatients rooms		**32**	**33**	**41**
Breast Surgery	**Theatres Sessions**	**15**	**16**	**18**
Radiotherapy	**Linacs**	**6**	**9**	**10**
Brachytherapy	**Theatre sessions**	**4**	**4-5**	**4-5**

To support the optimum delivery model both within NHS Lothian and at regional sites, capacity required in addition to the ECC is outlined in the tables below. These tables note the impact of the proposed model; further work is required to ensure this capacity is available in addition to current.

Figure 79: Requirements – Other locations within NHS Lothian – 2032 Impact

	St John's Hospital, Livingston		Midlothian Community Hospital		East Lothian Community Hospital	
	Current	**2032**	**Current**	**2032**	**Current**	**2032**
Total Chairs	21	17	0	5	3	5
Outpatient rooms	2	5				
Assessment Space	-	1				
Inpatient beds	-	5				
Breast Unit – Theatres	2 sessions	2 sessions				

Figure 80: Requirements –Regional Partners – 2032 Impact

	NHS Fife	NHS Borders	NHS Forth Valley
Chairs	+14 patients p.a.	<124 SACT episodes p.a.	
Outpatients		+1 session/week additional clinics	
Inpatient Beds	<1 bed Breast Surgery	0.1 bed; 8 sessions p.a.	<1 bed Breast Surgery
Theatres	+1 session Breast Surgery		+1 session Breast Surgery

3.2.2 Connection and collaboration with other clinical services

All patients on a cancer journey will experience essential clinical services beyond those in the ECC footprint and cancer services management scope. This includes diagnostics provided by imaging and laboratories; or a stay in critical care; or assessment and treatment by nuclear medicine physicists, physiotherapists, occupational therapists, dieticians, speech and language therapists. The proposed clinical model is reliant on other departments and professions collaborating to plan and implement service transformation for the whole patient pathway with cancer services.

The success of this model is dependent upon the Western General Hospital remaining a viable 'hot' site with sustainable critical services.

Figure 81: Required services on WGH Site to support

ITU/Critical care	Laboratories	Palliative Medicine/ Supportive Care	Acute Medicine
Acute Receiving Unit	Hospital At Night	Abdominal & Pelvic Surgery	AHP Services - Physiotherapy, Occupational Therapy, Speech and Language Therapy and Dietetics
Cardiology	Frailty service	ID/Microbiology	Resuscitation
Respiratory	Endocrinology	Gastroenterology	Medical Physics and Nuclear Medical Physics
Radiology, including interventional	24/7 Haematology, Blood transfusion and Biochemistry laboratory services	Pharmacy, including radiopharmacy	Surgical Services, including robotic surgery, nephrostomies, scopes, stents, ERCP

In order to achieve the stated '*Investment Objectives*' the service design must include agreed models of access and service dependency on essential services. Similarly, the realisation of many of the Benefits as described in Section 2.5 of the IA are dependent on the development of these essential services:

a) Critical Care
b) Laboratories
c) Imaging
d) Nuclear Medicine Physics

Critical Care at WGH is the subject of a separate business case, with close links between the clinical management and project teams to ensure synergy in the developing models and proposals. Appendix 12 gives an update on the current status of the Critical Care reprovision.

3.2.2.1 Essential Diagnostic Services for Cancer

The high level strategic vision for Laboratories, Imaging and Nuclear Medicine Physics at WGH is of a **Diagnostic Services Hub**, this hub being either a concept or a physical facility, to provide the diagnostic and treatment capacity for all services on site not just the ECC.

Development of the Diagnostic Services Hub model is an enabler to the cancer centre that also provides an opportunity to improve the cancer patient pathway, and subsequently improve performance around cancer waiting times.

It should also be noted that a new range of therapies are being SMC approved which require an up-front complex genomic test before the licence product can be prescribed. This class of treatments is expected to rapidly grow and future diagnostic capabilities will need to meet these emerging demands, as ultimately articulated in a national genomics strategy.

This proposal for the **Diagnostics Hub for the WGH will be further scoped and developed in a separate business case**, however, consideration should be given to efficient patient pathways and service delivery models which would be achieved if all radionuclide services (i.e. diagnostic nuclear medicine and molecular radiotherapy treatments) were co-located.

To ensure NHS Lothian patients can benefit from the innovative molecular radiotherapy treatments poised to revolutionise the management of certain cancers we need to ensure we are positioning our clinical service to deliver against the current and future clinical expectations. The workforce, expertise and engineering constraints in relation to radiation shielding, shared laboratory space, dedicated radioactive waste routes and storage will be considered in developing the business case for the Diagnostic Services Hub, at the same time informing the design and OBC for the ECC.

Appendix 13 gives a high-level overview provided by each of these diagnostic services.

3.2.2.2 AHP Services

Alongside the requirement for essential diagnostic services, there is also the recognition that cancer patient pathway transformation also requires adjacency and co-operation with a number of Allied Health Professions.

Diagnostic Radiographers and Therapeutic Radiographers are managed under imaging and radiotherapy respectively, and therefore included in the service model and workforce discussions elsewhere in this proposal.

The other key AHPs in cancer pathways are Physiotherapy, Occupational Therapy, Speech and Language Therapy, Dietetics are managed outwith the ECC. Appendix 14 articulates a high level, strategic vision which has been developed with key representatives from each area to ensure relevant expertise has been incorporated and that plans are being developed in line with existing NHS Lothian strategy.

Further development of AHP proposals will be completed as part of the Outline Business Case process.

3.2.3 Rapid Diagnostic Centre

The concept of a Rapid Diagnostic Centre (RDC) or Multidisciplinary Diagnostic Centre (MDC) is an example of patient pathway transformation which aims to provide rapid access to a range of diagnostic tests for suspected cancer in one location and conducted on one visit (when clinically possible).

Examples from England, Wales, Sweden and Denmark have demonstrated that access to an RDC/MDC has streamlined the process and improved the timeliness and quality of care for patients allowing GPs to refer into a 'one stop' service .

It may also have the potential to reduce the number of diagnoses through emergency presentations (though there is currently no data available to assess this impact).

Figures referenced in the interim report from the *Accelerate, Coordinate and Evaluate (ACE) Programme* in England (April 2018) suggest that survival for some of the most common cancers is more than three times higher for patients when diagnosed early at Stages 1 and 2[38].

[38] Cancer Research UK 'Survival three time higher when cancer is diagnosed early' 10th August 2015

Cancers presenting with non-specific symptoms can be more difficult to diagnose than those with 'red flag' alarm symptoms and evidence from Denmark suggests that as many as 52% of patients present without recognised alarm symptoms[39].

Wave 1 of the ACE Programme explored ways of achieving earlier diagnosis for patients with non-specific symptoms and found that opportunities existed to improve the time to diagnosis for these patients by developing a non-specific symptoms based diagnostic pathway, providing planned and rapid access to appropriate tests and reporting[40].

Recommendation 21 of *Achieving World Class Cancer Outcomes*[41] calls for the trial and evaluation of Multidisciplinary Diagnostic Centres for non-specific symptoms as part of Wave 2 of the ACE programme which completed at the end of 2018.

Headline findings from the MDC Wave 2 evaluation (April 2019)[42] suggest that the MDC model:

- Has value as a cancer diagnostic pathway for patients presenting with non-specific but concerning symptoms
- Facilitate the diagnosis of a broad range of cancer types, including rare and less common cancers
- Should be considered as an approach to achieving earlier diagnoses of cancer for patients presenting with non-specific symptoms, given the types of cancer being detected
- Provides a broad diagnostic approach encompassing a range of cancer and non-cancer conditions
- Provides a planned and rapid pathway for patients with complex presentation

NHS Lothian are keen to learn from the outcome of NHSScotland pilots to inform the development of this concept. Further scoping and modelling of potential patient catchment will be undertaken for outline business case.

3.2.4 Delivery of Clinical Model - Workforce

The significant workforce challenges in current services are described in section 2.3, drivers for change.

The described changes to the clinical service model will impact on all boards within the region; there will be a need to establish/develop the workforce in regional sites, and to scale up the workforce in the ECC. Whilst the timescale for the proposed reprovision centre will be 10 years, the specialised nature of the workforce means that training pipelines can be lengthy and complex.

3.2.4.1 Workforce strategy

Workforce sustainability within Cancer services in some boards is already under substantial pressure, with activity having to be transferred to the ECC. In response to these challenges the Scottish Government committed to publish a national framework for acute oncology by spring 2022. This will provide mechanisms for maximising and developing existing workforce capacity ensure consistent services for patients across Scotland.

[39] M.L.Ingeman, M.B.Christensen, F.Bro et al 'Cancer suspicion in general practice, urgent referral and time to diagnosis: a population based GP survey and registry study' BMC Cancer, Volume 14, no.636, 2014
[40] ACE programme 'Improving diagnostic pathways for patients with vague symptoms, final report' 2017
[41] NHS England 'Achieving World Class Cancer Outcomes: a strategy for England 2015-2020'Independent Cancer Taskforce 2015
[42] https://www.macmillan.org.uk/about-us/health-professionals/programmes-and-services/ace-programme/ace-programme-wave-two.html

The Scottish Government have also committed to modelling a sustainable cancer workforce, collecting and improving data on the cancer workforce to support sustainable workforce planning within their National Workforce Strategy for Health and Social Care published in March 2022 as a part of the National Recovery Plan. NHS Lothian and SCAN have provided the requested data through the National Cancer Strategy Group to engage with this work.

The output of these national commitments will help inform the development of the outline and full business cases.

The workforce challenges will be significant with both the optimum model and the decentralised model, the extent to which there is a differential impact will be assessed in more detail for OBC options appraisal.

In the meantime, there is a clear intention to harness this regional transformation programme to develop ECC as a regional and national 'feeder centre', to help grow the cancer workforce of the future.

3.2.4.2 Workforce planning

Workforce growth requirements will be driven by increased in demand for cancer services across the region (due to increasing cancer incidence, forecast population growth and increase in treatment options/complexity of patients). There will also be likely growth requirements as a result of physical changes such as an increased proportion of single rooms. The changes identified in the optimum model will also require both growth and workforce development within the ECC and also boards within the region.

It is clear in developing the OBC it will be essential to set out all areas of workforce expansion and development both within the cancer service and also clinical and non-clinical support services. There will be a development of a clinically led workforce planning process reflecting the national Scottish Government sponsored 6-step model.

Figure 82: Scottish Government's six-step model for workforce planning

Cancer services have already undertaken significant work in developing and extending roles in recent years – e.g. Advanced Nurse Practitioner (ANP), Clinical Nurse Specialist (CNS) and Advanced Practice Therapeutic Radiographer role development, enhancing skill mix and transferring medical responsibilities where appropriate. However, as we seek to plan services for the future it is important that there is a critical review of workforce models which support career pathways and workforce retention, making best use of the unique skill sets within the workforce. There are also new medical and associated professions roles such as physician associates that may provide scope to further diversify the multidisciplinary team which NES have been commissioned by the Scottish Government to review. There is also scope for the further extension of roles within the therapeutic radiographer, nursing and healthcare science workforces.

Given the workforce recruitment challenges it will also be important to work with the local international recruitment lead and the Centre for Workforce Supply to investigate the potential for international recruitment as a further supply channel. Given the demography of the various elements of the workforce and changes to pensions, it will also be important to look at staff retention and implementing the SG Flying Finish initiative which seeks to support flexibility in retirement.

As this work develops it will be important that there is on-going engagement to ensure that national training intakes within the nursing and medical training programmes reflect workforce requirements.

3.2.5 Holistic Patient Approach

Re-provision of the Edinburgh Cancer Centre is an opportunity to deliver services with a patient focused, holistic approach and to meet the aspiration of the refreshed Scottish Government Cancer Strategy '*Beating Cancer: Ambition and Action (2016)*'[43] around '*best care and support for all people with and beyond cancer*'[44]

[43] Refreshed in April 2020: An update: achievements, new action and testing change
[44] Beating Cancer: Ambition and Action (2016), refreshed in April 2020 p.13

There are a wide range of Third Sector partners who currently provide vital support services for cancer patients. It is the ambition of the proposal that this support is strengthened in order to provide a holistic patient experience.

The NHS Lothian Third Sector Voluntary Services Manager has undertaken a mapping exercise of 3rd sector service provision to cancer patients across the South East region. Once verified, the outputs of this exercise will be used to engage with Third Sector Partners (existing and potential future) to plan a regionally co-ordinated approach to Third Sector service provision with the overall aim of enhancing the patient experience.

This will be fully articulated as part of the OBC.

3.3 Options Identification

Initially, assumptions made about the emerging service model from work through 2018-20 were used to define a long list of options for improving the ECC. These were assessed by stakeholder groups in 2020, eliminating some to create a short list. This is described as **option assessment A** in the narrative later in this chapter.

In 2021, NHS Lothian revisited the service model, once again using 2019 activity data and also lessons learned since then about service trends and service delivery through the pandemic to re-model the projected growth and service options for cancer across the SCAN region. This is described as **option assessment B**.

3.3.1 Do nothing / baseline

The 'Do Nothing' option that has been included as a baseline assumes completion of the approved capital projects currently underway in the ECC. These are the Oncology Enabling Works approved in September 2020. The existing arrangements described above incorporate the works completed to date and the approved programme due to complete in 2023.

Figure 83: Do nothing / baseline

Strategic Scope of Option	Do nothing
Service provision	Service provision as described in the existing arrangements.
Service arrangements	Cancer Services remain in existing accommodation with some improvements to be completed under Cancer Enabling Works: • Refurbishment of Oncology Inpatient Wards 2 and 4 • Relocation of Cancer Assessment Unit • Expansion of Pharmacy in Ward 1 • Two new build Linac bunkers (one fallow) and Admin block The service model continues as described in the existing arrangements.
Service provider and workforce arrangements	Existing workforce will be used to deliver the service.
Supporting assets	Existing buildings and equipment will be used to deliver the service.
Public & service user expectations	While the Cancer Enabling Works will provide some improvements to the physical environment, capacity will not increase. Transformational redesign and delivery of cutting-edge research and innovation will not be possible within the 'Do Nothing footprint. Doing nothing would require the Scottish Government to agree derogations from applicable clinical standards that would not be met within the scope of this option.

3.3.2 Do minimum option – excluded

In 2020 there was a 'Do Minimum' option, over and above 'Do Nothing', but this has been overtaken by the approval and completion of the Clinical Trials accommodation, refurbished Haematology inpatient and daycase facilities, and the progress towards completing the Cancer Enabling Works programme described in the table above. There is no further 'do minimum' that NHS Lothian could implement within the existing facility; in approving these projects to address immediate and looming service pressures to ~2025, it was acknowledged that the ECC would require significant further transformation beyond what is possible in the current footprint.

3.4 Option Assessment A

3.4.1 Longlisted options

A long list of fourteen options was drawn up and a qualitative option appraisal process was conducted by key participants in the project, to consider the merits of each option against the established need for change. This initial long list of options is located at Appendix 15.

This included consideration of reproviding the cancer centre somewhere other than WGH.

Other Lothian acute hospital campus were discounted due to service delivery challenges, lack of adjacency to the Institute of Genetics and Cancer and the strategic commitment to the Western General campus. **The Lothian Hospitals Plan committed that the WGH would continue to provide the Cancer Hospital for South East Scotland.**

Alternative North-Edinburgh locations had previously been scoped for the potential development opportunities of ECC and/or wider WGH reprovision. These are detailed in section 2.4.2. Principally, they were discounted due to the requirement for the cancer centre to be on an acute hospital site.

Options which failed to respond satisfactorily to the needs for change were discounted. In addition, options which were relatively similar were discounted to allow five shortlisted options to be carried forward.

3.4.2 Shortlisted Options

Option A1: Do nothing - updated in 2022

Since completing the 2020 option appraisal the 'Do Nothing' baseline position has changed significantly, with completed changes to Clinical Trials and Haematology, and the Cancer Enabling Works underway. The assessments previously attributed to 'do minimum' have been reviewed and allocated to 'do nothing' now.

Option A2: Do minimum – discounted in 2022

On completion of the Cancer Enabling Works there will be no additional scope to 'do minimum' within the existing facilities and service.

Option A3: Reprovision – new build at WGH

The 'Reprovision' option seeks to replicate the existing service provision, providing like for like core cancer facilities, but allowing for adjustments in department areas to meet modern healthcare standards. This option does not seek to address future projected demand and capacity issues relating to the service. (Option 4, Appendix 15)

Option A4: Reprovision – Phased new build at WGH

Effectively the same as option 3 but included for the assessment of phasing over a longer period / phased programme.

Option A5: Enhanced Reprovision – new build at WGH

This option represents a purpose-built regional Specialist Cancer Centre with accommodation and infrastructure designed to meet current applicable clinical standards - including design and technical requirements and incorporating transformational redesign of patient pathways. In addition, the enhanced option would build upon the existing complement of services providing a wide range of specialist cancer therapies and providing enhanced clinical trials and research capacity. (Option 9, Appendix 15)

Option A6: Enhanced Regional Reprovision– new build at WGH and regional developments

As the Enhanced Reprovision option above but additionally seeks to integrate the service regionally through satellite and outreach facilities. As the proposal progresses towards OBC, ongoing regional discussions and collaboration will result in potential sustainable service delivery options being scoped and defined. Options would subsequently be refined and costed in more detail allowing an objective scored option appraisal to be undertaken with relevant stakeholders. (Option 12, Appendix 15)

The summary of strengths and weaknesses provided for each shortlisted option in Figure 84 are directly extracted from long list analysis provided at Appendix 15. Note that the option numbers are different in the appendix.

Figure 84: Strengths and weaknesses of shortlisted options

	Options				
	A1 Do nothing (updated 2022)	**A3 Reprovision at WGH**	**A4 Reprovision at WGH - phased**	**A5 Enhanced reprovision at WGH**	**A6 Enhanced reprovision at WGH and regional sites**
Facilities and capacity are not able to meet projected demand	I	I	I	S	S
HAI patient safety issues	I	S	S	S	S
Poor patient experience	I	S	S	S	S
Workforce challenges - recruitment and retention	W	I	I	S	S
Wide range of cancer therapies	W	W	W	S	S
Opportunities for access to a full programme of trials and research	W	W	W	S	S
Cost (capital/revenue)	S	I	W	W	W

Key:

Strength	S
Improved	I
Weakness	W

3.4.3 Departmental Service Scope

The departmental service scope for each option was then developed allowing initial schedules of accommodation to be generated. These supported generation of initial cost estimates for the options.

In order to provide a better understanding of the differences been the re-provision (A3 and A4) and the enhanced re-provision options (A5 and A6), a detailed schedule of services was created. This is located at Appendix 16.

3.4.4 Stakeholder assessment

A stakeholder workshop in April 2019 undertook a qualitative assessment of each option.

Figure 85: Initial Option Assessment Workshop April 2019

Workshop process:

1. Each shortlisted option was carefully explained to the participants enabling them to understand the potential scope of the option and the associated service arrangements. It was emphasised that the assessment was of the Clinical Model of Care and how it could be delivered - not on the specifics of a building design.

2. Facilitators presented some pre-determined advantages and disadvantages associated with each option. Groups were then formed to consider any additional advantages and disadvantages. (Summarised in Figure 86 below) .

3. The groups considered the merits of each option under a SWOT analysis framework: exploring the strengths, weaknesses, opportunities and threats for each option.

4. The Investment Objectives were then described to the group and discussed before each group was asked to assess the options against these objectives and provide a consensus Groups completed an option assessment matrix to score the options against the project Investment Objectives. Scoring descriptors were high level: 'Discounted', 'Carried Forward / Less Attractive', 'Carried Forward / More Attractive' and 'Preferred'.

5. Facilitators then combined the group scoring on a master option assessment matrix to illustrate the overall consensus. (Summarised in Figure 87 below).

The output of this event is summarised below.

Figure 86: Stakeholder SWOT analysis

	Options				
	A1 Do nothing (updated 2022)	**A3 Reprovision at WGH**	**A4 Reprovision at WGH - phased**	**A5 Enhanced reprovision at WGH**	**A6 Enhanced reprovision at WGH and regional sites**
Advantages - Strengths & Opportunities	- Requires no change - Requires no additional investment	- Additional investment reasonable - Compliant accommodation - Improved patient experience	- Additional investment reasonable - Compliant accommodation - Improved patient experience	- Respond to service sustainability - Compliant accommodation - Allows service transformation - Recruitment and retention opportunities - Availability of specialist therapies - Integration & development of research & trials - Improved staff and patient experience - Future proofing of service - Training capability	- All the advantages noted under option 3, plus: - Care closer to home - Improved access to clinical trials

	Options				
	A1 Do nothing (updated 2022)	**A3 Reprovision at WGH**	**A4 Reprovision at WGH - phased**	**A5 Enhanced reprovision at WGH**	**A6 Enhanced reprovision at WGH and regional sites**
Disadvantages - Weaknesses & Threats	- Service sustainability issues - Building issues (derogations) - Min. service transformation - Facilities nearing max. life span - Sub-optimal patient experience - Patient safety - More investment required in future years to remain viable - Missed opportunity for Scotland to become a leader in provision of cutting edge cancer care, and cancer product development - Inequitable service standards for patient of SES relative to elsewhere in Scotland and the UK.	- Service sustainability issues - Limited service transformation - Core services only provided - Service targets may not be met - Adjacencies to other site services - Threat of being unable to provide a workforce model	- Service sustainability issues - Limited service transformation - Core services only provided - Service targets may not be met - Longer timeframe affecting recruitment and retention, patient experience and workforce challenges to cope with detached services/ buildings	- Workforce availability	- Substantial financial investment - Potential workforce and transport issues relating to Regional work - Workforce availability

Figure 87: Stakeholder scoring summary

	Options				
	A1 Do nothing (updated 2022)	**A3 Reprovision at WGH**	**A4 Reprovision at WGH - phased**	**A5 Enhanced reprovision at WGH**	**A6 Enhanced reprovision at WGH and regional sites**
Are the indicative costs likely to be affordable? (Yes, maybe/ unknown, no)					
Increase service capacity and sustainability to meet demand	No	Partially	Partially	Fully	Fully
Building designs will provide appropriate facilities for clinical care that meet all required standards	Partially	Fully	Fully	Fully	Fully
Opportunities available to ensure recruitment and retention of specialist staff	No	Partially	Partially	Fully	Fully
Offering a range of education and training for professional development	No	Partially	Partially	Fully	Fully
Wide range of specialist cancer therapies available for the patients of South East Scotland	No	No	No	Fully	Fully (Regional)
Clinical Research and Trials integrated with Cancer Services	No	Partially	Partially	Fully	Fully
Are the indicative costs likely to be affordable? (Yes, maybe/ unknown, no)					
Affordability	Yes	Maybe	Maybe	Unknown	Unknown
Evaluation					
Discounted			X		
Carried forward / less attractive	X	X			
Carried forward / more attractive				X	
Preferred					**X**

3.4.5 Conclusions of Option Assessment A

The outcome of this process was that options 1 (for baseline comparison purposes), 4, 5 and 6 were identified in the 2020 Initial Agreement to go forward to OBC.

It was agreed that Option 4 could be discounted as it merely describes a delivery option for Option 3.

The group consensus from the option assessment work in 2019 was that **Option 6 (Enhanced Regional Re-provision) was the preferred option**.

3.5 Option Assessment B

3.5.1 Service Model Revisited in 2022

As signed off by the 2022 Regional Cancer Service Model Review, the clinical model is described in section 3.2.1 above.

There is not a direct correlation with the 2019 options; the 2022 process learned from and built on preceding work and taking on board the excluded options at the earlier stage, determined the options for delivering the service model. In agreeing these options the team assumed that:

a) the regional specialist cancer centre will remain at WGH, in line with extant NHS Lothian strategy
b) there was no scope for reproviding the ECC to modern healthcare standards without also updating the service model delivered (option A3)
c) phasing options for delivery were not related to the clinical service model (option A4).

3.5.2 Options

Option B1: Do nothing

- No change to service delivery model.
- Demographic change and tumour site growth impact:
  - Demographic growth by age and gender and Health Board by year to 2032;
  - Tumour site specific growth to 2027 based on ISD tumour site specific growth to 2027;
  - Additional tumour site growth based on the British Journal of Cancer to 2032.

Option B2: Optimum service model

- Demographic change and tumour site growth impact as in Option 1
- Changes to planned care: shift in care setting; increased clinical trials across all care settings.
- Changes to unplanned care: increased direct discharge; reduced attendance; shift to planned care.
- Adoption of latest radiotherapy treatment techniques.

Option B3: Decentralised radiotherapy model

- As Option 2, plus
- Development of a satellite radiotherapy unit within the East of Scotland network. Assumed to be located on an acute site within the East of Scotland.

3.5.3 Stakeholder assessment

The Steering Group for the Regional Service Model Review assessed the options presented to them. The table below summarises the assessment of each option against the project investment objectives and SCIM infrastructure critical success factors of the project.

An analysis of the advantages (strength and opportunities) and disadvantages (weaknesses and threats) of each option is summarised in figure 88.

Figure 88: SWOT analysis, Options Assessment B

	Options		
	B1 Do nothing	**B2 Optimum service model**	**B3 Decentralised Radiotherapy Model**
Advantages Strengths & Opportunities	• Limited change • Avoids risk of insufficient community provision	• Increased care at home/community setting • Reduced length of stay • Shift unplanned to planned care • Ability to offer increase number of options to patients • Seen as Centre of Excellence – easier to recruit and retain staff	• Care closer to home for some residents • Increased additional future capacity options • Easier to accommodate any changes to regional flows from Tayside • May address areas of unmet need where patients not opted for radiotherapy due to geography
Disadvantages Weaknesses & Threats	• Increased stay in hospital • Less care delivered at home • Requirement of sufficient increase in workforce, estate and costs • Unable to offer increased number of treatment options	• Additional resources within community • Risks associated with change in modelled assumptions impacted bed requirements • Less service resilience if concentrated on single site	• Split site working for Radiotherapy staff • Potential diseconomies of scale • Challenge to maintain skills and training of staff deployed at satellite site • Unable to offer specialist treatments /newest technologies at satellite site may impact on equity of access to new/trial treatments/technologies • Recruitment challenge to maintain two services • Location maybe sub-optimal and not address population density due to need to locate on an acute site

Figure 89: Scoring summary, Options Assessment B

		Options		
		B1 Do nothing	**B2 Optimum service model**	**B3 Decentralised Radiotherapy Model**
Assessment against Investment Objectives				
1	Increase service capacity and sustainability to meet demand and provide timely service access for patients	✗	✓	✓
2	Design buildings to provide appropriate facilities for clinical care that meet all required standards, allow service collaboration and provide an improved patient experience	**?**	✓	✓

3	Improve recruitment and retention of specialist staff Offer a range of education, training, research and academic opportunities for professional development	✗	✓	?
4	Offer a wide range of specialist cancer therapies to the patients of South East Scotland	?	✓	✓
5	Integration of Clinical Research and Trials with Cancer Services to enable access to an expanded range of trials and improve patient outcomes	?	✓	?
Assessment against Scottish Government infrastructure Critical Success Factors				
1	Person Centred	✗	✓	✓
2	Safe	✓	✓	✓
3	Effective Quality of Care	✗	✓	?
4	Health of Population	?	✓	✓
5	Value & Sustainability	✗	✓	✗
Evaluation				
		✗	✓	?
			Preferred service option	**Possible service option**

The rationale for each assessment is shown in Appendix 15.

3.5.4 Conclusions of Option Assessment B

The group consensus from the option assessment work in 2022 was that **Option 2 was the preferred option**. This delivers the agreed optimum service model, and meets all of the investment objects and critical success factors.

The decentralised model meets a number of investment objectives and critical success factors, however, is unlikely to meet the critical success factor in relation to value for money and sustainability metrics. This is as a result of duplication of some services; split site working and increased workforce sustainability issues. Further work is recommended as part of the Outline Business Case to establish the overall quantified benefits and risks of a decentralised radiotherapy to confirm whether this option is feasible.

Therefore, it is proposed that options B1 (for baseline comparison purposes), B2 and B3 are carried forward for development and full assessment against both benefit and cost criteria, for the OBC.

Recognising the time that has passed since 2019-20, we would undertake to update the stakeholder analysis for the project and re-engage with this audience for development of the next steps for the business case. This will commence on confirmation that this Initial Agreement has been approved.

3.6 Indicative Costs

The development of the Schedule of Accommodation began in May 2019 and has been refreshed with the update of the regional service model in 2022. This work is based on 2019 activity data, projected changes in population and cancer incidence, and proposed changes the service model in agreement with the clinical management team and SCAN boards.

The outputs include the numbers of clinical treatment areas, and consequently provide an estimate of floor area which in turn informs the estimated capital cost range.

The table below details the indicative whole life costs associated with each of the shortlisted options. For further detail around the determination of the costs see Section 5 – Financial Case.

The additional assumptions associated with the calculation of the net present value (NPV) of costs are:

- A discount rate of 3.5% has been used in line with Government guidance.
- The Net Present Value (NPV) of costs are calculated over a 60 year period. Inflation and VAT are excluded in line with SCIM guidance.
- Phasing of the costs reflect the useful life and the programme of works as identified in the timetable in the Commercial Case.

Figure 90: Indicative costs of shortlisted options (£m)

	Options		
Cost – Mid Estimate (£m)	**B1 Do nothing**	**B2 Optimum service model**	**B3 Decentralised Radiotherapy Model**
Whole life capital costs	90.7	584.0	609.3
Whole life operating costs	0.0	900.6	908.9
Estimated Net Present Value (NPV) of Costs	**90.7**	**1,484.6**	**1,518.2**

The above table shows no whole life operating costs for the 'Do Nothing' option. However, due to the anticipated rising demand for cancer services, this is not a true reflection of this option. Work is underway to quantify the likely operating cost impact of the 'Do Nothing' option and will be incorporated into the IA, when available.

The reprovision of the Edinburgh Cancer Centre will also have significant positive impact on the wider economy, environment and communities. NHS Lothian look forward to working with Scottish Government further on the identification and quantification of such benefits to contribute to the assessment of the proposal.

3.7 Preferred way forward

The second option appraisal learned from and built on the conclusions of the extensive engagement in 2019, and reinforced with partners across the SCAN region the preferred way forward for ECC reprovision.

Figure 91: Preferred way forward

Strategic Scope of Option	Optimum service model Reprovided in a purpose-built facility at WGH
Service provision	Purpose built 'Regional Specialist Cancer Centre' incorporating transformational redesign of patient pathways Wide range of specialist cancer therapies available for the patients of South East Scotland, enabling repatriation of patients from the SE and potentially across Scotland Scoping of a Rapid Diagnostics Centre and an Essential Services Hub to support transformation of cancer care Internationally leading Clinical Research and Trials capability providing most innovative cancer therapies for people of Scotland
Service arrangements	The service will be delivered through a 'hub and spoke' model with specialist treatments available in the centre and expanded outreach capacity across the region to ensure equity of access to service and research across the region
Workforce arrangements	Robust regional workforce plan to be developed as Business Case progresses to ensure sustainability of regional services and attract high calibre specialist staff to Scotland Provide employment opportunities across the region, continued close engagement with Regional boards to ensure alignment with local Boards workforce planning Innovation, role re-design and Workforce Development/training for staff regionally and nationally to address training needs and retain/upskill specialist staff
Supporting assets	Purpose built facility incorporating cutting edge technology Scoping of a Rapid Diagnostics Centre and Essential Service Hub to support transformation of cancer care
Public and service user expectations	Clinical standards met Holistic patient approach including support for patients living with and beyond cancer managing long term conditions

3.8 Design Quality Objectives

NHS Lothian is required to follow SCIM requirements for the NHS Scotland Design Assessment Process (NDAP) in the implementation of capital projects.

The approach of NHS Lothian is to achieve good design to support value for money solutions and future proof facilities that improve the patient experience. This can be achieved through good, cost effective design within its built environment and is committed to improving the quality of life for people who use

its premises as patients, staff, visitors and the local community by enhancing and creating buildings and spaces that are safe, environmentally sustainable, and healthy for present and future generations.

NHS Lothian demands maximum benefit from its investments in healthcare facilities. The design of this redeveloped facility and its environment should promote best working practice, be welcoming and accessible to people from all walks of life and all abilities, and generate a sense of wellbeing, belonging, and place to all who use it. The building quality and materials should optimise whole life value and seek to minimise the environmental impact of the development and enhance the wellbeing of users.

A Design Statement has been prepared for this Initial Agreement stage to support the design assessment process which will take place at the Initial Agreement, Outline Business Case and Full Business Case stages of approval. This requirement is mandated through NHS CEL 19 (2010) and supported by the Scottish Government's Policy on Design Quality for NHS Scotland. The Design Statement is available upon request.

The resultant Achieving Excellence Design Evaluation Toolkit (AEDET) Benchmark and AEDET Target outputs are presented in Appendix 4.

The delivered project will also be specified to comply with relevant statutory and technical guidance documentation. The intention is to minimise any deviation from the standards, however any proposed derogations will be reviewed as appropriate and accepted or not and with a clear audit trail of decision-making being required at every stage. Guidance will be sought from HFS as required. Documentation will be specified generally on the basis of the following table and the list of NSS HFS guidance completed as part of the NDAP submission.

Figure 92: Statutory, Design and Technical guidance

Mandatory Requirements Healthcare Guidance	
NHS Scotland policy letters (DLs, CELs, CMOs)	Scottish Government: Health and Social Care; Chief Medical Officer directorates
Scottish Health Planning Notes (SHPN)	Health Facilities Scotland
Scottish Health Facilities Notes (SHFN)	Health Facilities Scotland
Scottish Health Technical Memoranda (SHTM)	Health Facilities Scotland
Scottish Health Technical Notes (SHTN)	Health Facilities Scotland
Health Building Notes (HBN)	Dept of Health (England)
Health Technical Memoranda (HTM)	Dept of Health (England) when Scottish versions not available
Health Facilities Notes (HFN)	Dept of Health (England)
Other relevant design and technical guidance in support of the above or additional to it may be incorporated as relevant.	Procurement and Construction Policy note: NB: Construction quality in particular. HSE and other Health and Safety guidance Building Regulations CIBSE BRE Building Standards Non-domestic Technical Handbook Sustainability policies. Dementia design and specification guidance. Others
Statutory Requirements	
	Planning permission Building Regulations compliance Equality Act compliance Health and Safety Executive (HSE) compliance

Mandatory Requirements Healthcare Guidance	
	Construction (Design and Management) Regulations compliance
Other Mandatory Requirements	
	Activity Data Base (ADB) Achieving Excellence Design Evaluation Tool NHS Scotland Design Assessment Process

3.9 Sustainability Objectives

In line with recently issued NHS Scotland Policy on the Climate Emergency and Sustainable Development – DL (2021) 38 (10th November 2021) and the issue of the Scottish Health Technical Note 02-01: Sustainable Design and Construction (SDaC) Guide, it is NHS Lothian's intention to comply with the Net Zero Carbon strategy.

NHS Lothian's Sustainable Development Framework and Action Plan, adopted in December 2020, is at the core of the organisation's ethos. The WGH Site Masterplan and the ECC reprovision will be delivered through the SDaC process, and the relevant SDaC documentation will be produced for OBC and FBC stages.

The proposed provision of the ECC on the existing WGH site will require to take into context the site masterplan and the developments already underway within its footprint, including the provision of a new hospital energy centre and services infrastructure projects in connection with that. NHS Lothian will ensure that the new developments at the WGH achieve the aims set out in the policy and SDaC; its buildings will be delivered through design, construction and operational stages in accordance with the sustainability objectives, including Net Zero Carbon; and the buildings will be designed to optimise energy performance using climate projections to 2050. NHS Lothian will also ensure that any existing facilities vacated through this proposal will be considered for re-use and re-purposing as a part of the masterplan for WGH.

The appointment of the design team will be progressed upon the IA approval and their input into the SDaC process is essential, therefore no outputs were able to be produced at this stage, apart from considerations discussed during the AEDET and Design Statement workshops recorded in the appendices of this IA document. The Sustainability Brief for the Technical Consultant Team that will be produced early in the OBC stage will include the following aspirations and requirements:

- Commitment to prioritisation to physical wellbeing of users by ensuring internal environments are designed to create healthy and comfortable spaces for all;
- Promoting design that prioritises physical, social, mental, occupational and economic wellbeing of all users;
- Commitment to circular design and construction processes & circular procurement hierarchy;
- Aspiration of a net zero greenhouse gas emissions development,
- An embodied carbon reduction development and strategy;
- Commitment to water efficiency measures.

In addition to sustainability in facilities and construction, NHS Lothian and regional partners are committed to the design and delivery of a sustainable service model, reducing patient and staff miles whilst providing care closer to home where possible.

4 The Commercial Case

This Commercial Case outlines the proposed commercial arrangements and implications for the ECC project, by addressing question set out in the SCIM Initial Agreement guidance.

4.1 Procurement Strategy

Traditional capital funding is predicted to be the financing mechanism for the project.

NHS Scotland has established national procurement routes for major asset investment which have been fully developed within the EU public sector procurement regulation framework. It is a requirement for all NHS projects above £1m threshold to be procured under the NHS Scotland Frameworks Scotland 3 (FS3) arrangements. This route offers an established and pre-selected list of constructors as a Principal Supply Chain Partners (PSCP) bringing a full supply chain of designers and consultants. It facilitates the earliest construction start and provides design and build solutions by appointing a single contractor to act as sole point of responsibility for the management and delivery of an integrated design and construction project in a wide array of NEC contract types, which helps the client to manage risk better. It has been used successfully by NHS Boards in Scotland for over 10 years.

This procurement type would be the Board's preferred option, however it is the understanding of the project team that the NHSScotland Capital Programme for the next 10 years is in the region of £10 billion and Frameworks Scotland is unlikely to be able to cope with such large investment as the proposed Edinburgh Cancer Centre. Discussions held with Health Facilities Scotland indicate that an alternative procurement route should be explored for the eventuality that FS3 will not be able to support a project of this size from within the current structures.

The second option is therefore a bespoke approach through open competition adhering to Scottish Government procurement procedures with sub options in terms of delivery model, ranging from a traditional approach, through a two-stage design manage and construct contract to design and build option. Open competition can provide opportunity of engaging European construction partners as well as national contractors to maximise opportunities and alleviate risks in connection with the current market conditions.

The assessment of the health and capability of the market and further consideration given to the above sub options has brought a preferred solution for the procurement. This involves appointment of the Lead Advisor at the outset of the OBC stage. This appointment would cover the Project Management, Cost Advisor and likely the NEC Supervisor services as well as the technical consultant team to deliver an exemplar design through the OBC stage/RIBA Stage 2: Concept Design.

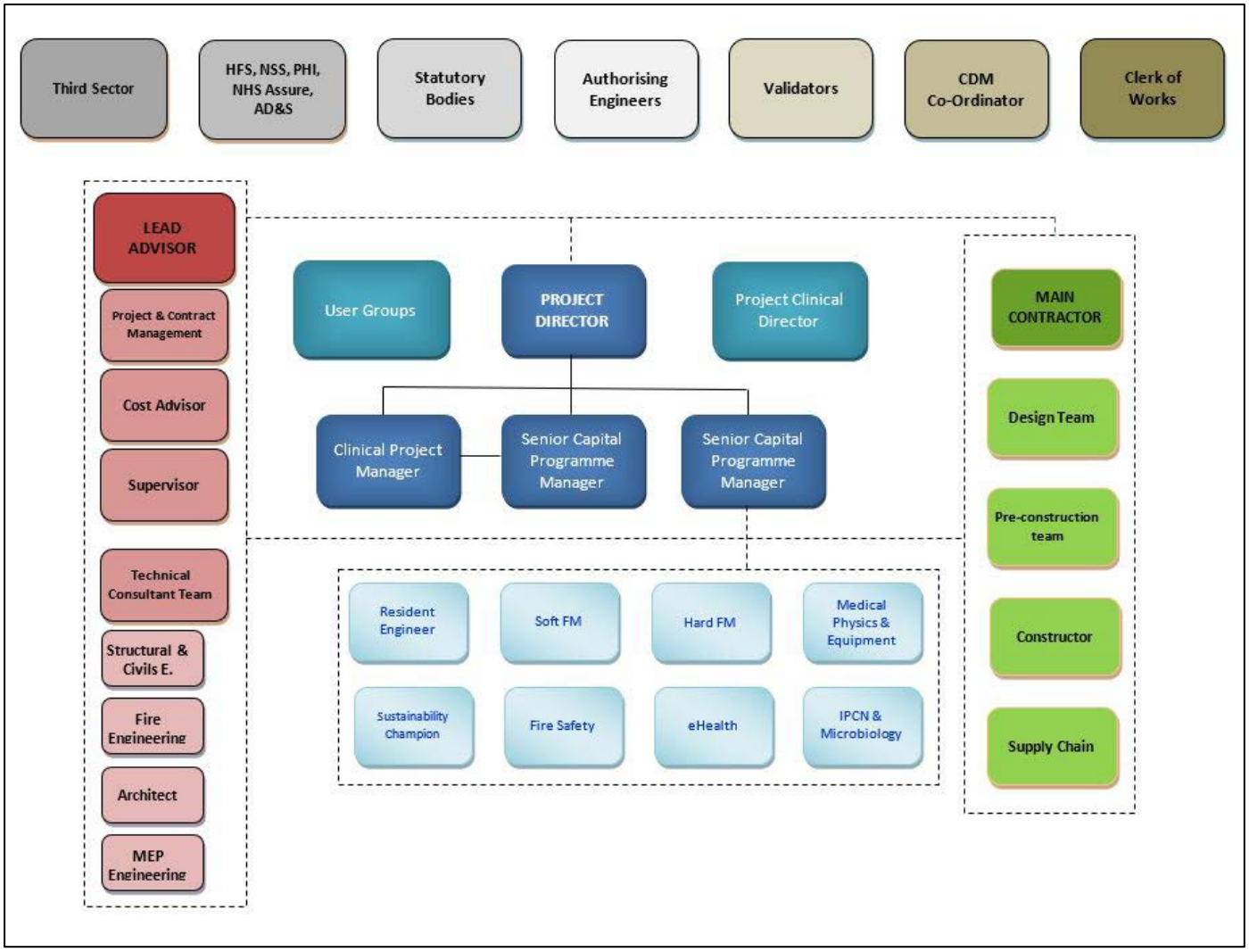
Following anticipated OBC approval by the Scottish Government and the first stage of a two-stage procurement exercise, the appointment of the Main Contractor would be made at the outset of the FBC stage based on the exemplar design developed by the Lead Advisor team.

The technical consultant team as part of the Lead Advisor appointment would then perform peer review of the Main Contractor's design, thus providing additional assurance that the design and the delivered facility comply with the current relevant regulations and guidance. Figure 93 below shows a proposed external team structure and interdependencies.

The actual procurement method (Open, Competitive Dialogue) and contract type will be chosen once the procurement route is selected.

The above avenues will be further explored in the second half of 2022. Further input from HFS in terms of the availability of Frameworks Scotland or any other routes will be sought to ascertain the position and availability of the solutions as the project enters the OBC stage.

Figure 93: External project team structure



4.2 Programme / Timetable

A detailed Project Programme has been developed and is attached as Appendix 17. The table below shows key milestones:

Figure 94: Key milestones

Key Milestone / Activity	Date
Approval of the IA by SG	Autumn 2022
Appointment of Lead Advisor team	April 2023
Outline Business Case Approval	December 2024
Appointment of the Main Contractor	June 2025
Full Business Case Approval	November 2028
Construction Commencement	February 2029
Construction Completion	June 2032
Commissioning Complete	October 2032
Service Commencement	November 2032

5 The Financial Case

5.1 Capital Affordability

The estimated capital cost range associated with each of the three short listed options is detailed in the table below. Do nothing represents the baseline option and assumes completion of the Oncology Enabling projects.

The table presents the low, mid and high estimates derived for each of the options and indicates an estimated capital cost for the preferred option of £925m - £1,195m.

Figure 95: Capital cost range (£m)

Capital Cost Range (£m)	B1 Do nothing	B2 Optimum service model	B3 Decentralised Radiotherapy Model
Low	40	925	965
Mid	43	1,168	1,219
High	45	1,195	1,247

5.1.1 Mid Capital Cost Estimation

The mid capital cost was estimated using information provided by the cost advisors, the project team and lifecycle data from the NHS Lothian capital planning system (where relevant).

Figure 96: Mid capital costs (£m)

Capital Cost (£m)	B1 Do nothing up to 20325	B2 Optimum service model	B3 Decentralised Radiotherapy Model
Construction	-	352.6	368.5
Professional Fees & NHS Project Team Fees	-	28.2	29.5
Other Costs (Surveys, IT, Estates)	-	7.6	8.0
Equipment	-	72.3	74.9
Site Enabling Allowance	-	1.0	1.0
Legal/Statutory Costs Allowance	-	0.5	0.5
Arts and Therapeutic Design	-	11.3	11.8
Lifecycle	29.3	-	-
Inflation	6.9	235.5	245.8
Optimism Bias	-	264.5	276.0
Total Cost (excluding VAT)	**36.2**	**973.5**	**1,016.0**
VAT	7.2	194.7	203.2
Total Capital Cost	**43.4**	**1,168.2**	**1,219.2**

The assumptions made in the calculation of the capital costs are detailed below. These will all be continuously refined through the business case process.

5.1.1.1 Option B1: Do nothing

The 'Do Nothing' option assumes completion of the Oncology Enabling Projects currently underway on site. The capital costs associated with these are not included as these projects have been separately approved and funding already committed.

The costs that are shown for this option represent backlog maintenance estimates required for the existing cancer centre up until the end of the construction timeline in 2032. Costs for maintenance required beyond this date have not been included for any options but are estimated within the NPV calculations in the Economic Case.

Inflation has been included at 23.39% using Q1 2022 as the base date and calculating to the mid-point of the maintenance period (Q2 2027) using BCIS projections.

To cope with forecast demand, additional investments in the current estate may be required under the do nothing option – these have not yet been identified and are not included in the costs above.

If the ECC is not reprovided there would be significant costs after 2032 to maintain the existing estate as it is approaching the end of its life. These costs are not reflected above.

5.1.1.2 Options B1 and B2

Capital cost estimates provided by the cost advisors have been prepared based on the developed Schedule of Accommodation as detailed in Appendix 18; the details of what areas are included within the scope of this cost are included in this appendix. The cost report for options B2 and B3 is included at Appendix 19.

The Schedule of Accommodation was developed based on information provided by a Healthcare Planner on the facilities required to deliver the strategic service model. The services in scope are as detailed in Figure 5, those services specifically required for the ECC. No costs are included for the development of the 'Essential Services Hub' or wider WGH site Masterplan, both of which will be considered as part of separate enabling Business Cases.

Detailed assumptions in the determination of the capital costs are noted below:

- Based on information provided by cost advisors and benchmarked against similar projects.
- Optimism bias has been calculated in line with SCIM guidance and is included at 37.3%. This includes allowances for uncertainty against output specification and design, policy environment, stakeholder engagement, procurement factors, and the planning and regulatory environment.
- Sustainability uplift has been included at 15% of construction costs and is included within the construction line. This is to be refined following more detailed criteria/guidelines.
- Equipment has been included at 15% of costs plus an allowance of £14m for high value equipment requirements.
- Inflation has been included at 49.74% using Q1 2022 as the base date and calculating to the mid-point of construction (Q3 2030) using BCIS projections. It should be noted that the project timelines go outwith BCIS projection timelines, so trends have been used to go beyond the date for which projections are available.

5.1.1.3 General assumptions

In addition to the above the below assumptions have been applied across all options:

- VAT has been included at 20% on all costs. No VAT recovery has been assumed. Working with VAT advisors, VAT recovery will be further assessed in the OBC following confirmation of the procurement route.

The movement in capital costs since the previous IA are detailed in the below table.

Figure 97: Movement in capital costs (£m)

Capital Cost (£m)	A5 Enhanced reprovision	B2 Optimum service model	Movement	Comments
Construction	237.9	352.6	114.7	Driven by an increase in GIFA from 39,169sqm to 46,980sqm and an increase in construction rate from £5,422/sqm to £7,506/sqm due to market conditions
Professional Fees & NHS Project Team Fees	17.0	28.2	11.2	Calculated as a percentage (8%) of costs – increase driven by the increase in costs above
Other Costs (Surveys, IT, Estates)	4.6	7.6	3.0	Calculated as a percentage of costs (2%) – increase driven by the increase in costs above
Equipment	49.1	72.3	23.2	Calculated as 15% of costs plus a £14m allowance for identified high value equipment in both options – increase driven by the increase in costs above
Site Enabling Allowance	-	1.0	1.0	Not previously included
Legal/Statutory Costs Allowance	-	0.5	0.5	Not previously included
Arts and Therapeutic Design	-	11.3	11.3	Not previously included
Inflation	82.2	235.5	153.3	Updated for latest available indices and anticipated programme
Optimism Bias	145.7	264.5	118.8	Calculated as a percentage (37.3%) of costs – increase driven by the increase in costs above
Total Cost (excluding VAT)	**536.5**	**973.5**	**437.0**	
VAT	107.3	194.7	87.4	Calculated as a percentage (20%) of costs – increase driven by the increase in costs above
Total Capital Cost	**643.8**	**1,168.2**	**524.4**	

The increase in construction cost follows an increase in GIFA required of 19.9%. This was partly driven by revisiting earlier work on the clinical service model and refreshing the proposal that was submitted in the 2020 version of the IA, although this only identified a small increase in clinical spaces required. The majority of the 19.9% GIFA increase is driven by additional allowances for updated guidance on net zero carbon and other infrastructure.

In summary, the majority of the movement from the previous IA detailed above, is driven by market conditions observed to date, a prudent increase in inflation assumptions, and corresponding increases in optimism bias and VAT.

5.1.2 Lifecycle Replacement Costs

It is acknowledged that the mid capital costs detailed above do not consider lifecycle replacement costs that will need to be met in the years following completion of construction. These annual capital costs are estimated below.

Figure 98: Lifecycle replacement costs (£k)

Annual Lifecycle Capital Cost (£k)	B1 Do nothing	B2 Optimum service model	B3 Decentralised Radiotherapy Model
Lifecycle	3,520	1,323	1,390

5.1.2.1 Assumptions

- Option B1: Based on information from the Capital Planning System – determined as the average estimated lifecycle replacement cost required over the past 3 years. It should be noted that this does not take into account that the existing buildings are deteriorating so these costs are likely to increase.
- Options B2 and B3: Based on an estimate of £28.15/sqm provided by our cost advisors based on experience from previous new build projects.
- Inflation has not been applied to these costs.

5.1.3 High/ Low Capital Cost Estimation

It is noted that the estimated capital costs associated with each of the short-listed options are sensitive to factors that are subject to uncertainty. A sensitivity analysis has been completed for each option to determine the estimated high/ low capital cost.

The assumptions made in the calculation of the high/ low costs are detailed below:

5.1.3.1 Option B1: Do nothing

- High: Inflation increased by a further 5% due to uncertainty
- Low: Inflation adjusted to 14.46% based on historic rates

5.1.3.2 Options B2 and B3

- High: Upper bound Optimism Bias (40.5%)
- Low: Optimism bias adjusted to reflect the possibility of a more stable policy environment and a greater robustness of the output specification, and inflation reduced to 20.25% based on historic rates.

5.2 Revenue Affordability

The estimated incremental recurring revenue costs associated with each of the short-listed options are detailed in the table below. These represent the additional revenue costs when compared to the baseline 'Do Nothing' option when the ECC is operating at full capacity.

The table below presents the low, mid and high estimates derived for each of the options and indicates an estimated incremental recurring revenue cost for the preferred option of £44.2m to £54.0m when operating at full capacity.

Figure 99: Incremental revenue cost range (£k)

Incremental Recurring Revenue Cost/year (£k)	B1 Do nothing	B2 Optimum service model	B3 Decentralised Radiotherapy Model
Low	-	44,186	44,590
Mid	-	49,094	49,545
High	-	54,004	54,499

5.2.1 Mid Revenue Cost Estimation

The table below shows a breakdown of the mid revenue costs. The assumptions made in the calculation of the revenue costs are detailed below. These will be continuously refined through the business case process as detailed staffing models are developed, and the building design is refined.

Figure 100: Mid incremental revenue costs (£k)

Incremental Recurring Revenue Cost/Year (£k)	B1 Do nothing	B2 Optimum service model	B3 Decentralised Radiotherapy Model
Staffing	-	14,891	15,210
Facilities Staffing	-	1,317	1,449
Drugs	-	29,815	29,815
Other Non-Pays	-	589	589
Facilities Non-Pays	-	2,345	2,345
eHealth	-	137	137
Total Incremental Revenue Cost/Year	**-**	**49,094**	**49,545**

The assumptions made in the calculation of the revenue costs are detailed below. These will be continuously refined through the business case process.

5.2.1.1 Option B1: Do nothing

The revenue costs associated with the ongoing Oncology Enabling projects are not included in the 'Do Nothing' option above as these projects have been separately approved and funding already committed.

The above table shows no incremental revenue cost for the 'Do Nothing' option. However, due to the anticipated rising demand for cancer services, this is not a true reflection of this option. Work is underway to quantify the likely revenue impact of the 'Do Nothing' option and will be incorporated into the IA, when available.

5.2.1.2 Options B1 and B2

The incremental revenue costs for Options B2 and B3 are developed based on the strategic service model and the schedule of accommodation. The detail on services in scope, and associated staffing cohorts are included in Figure 5. As with the capital costs no costs are included for the development of the 'Essential Services Hub' or wider WGH site support services, both of which will be considered as part of separate enabling Business Cases.

There are two key drivers behind the incremental revenue costs: activity growth and the increased capacity provided by the shortlisted options.

These costs represent the revenue cost when the reprovided ECC is operating at full capacity and all beds, chairs and theatres are utilised. These are based on activity data provided by NHS Lothian and subsequent modelling provided by the Healthcare Planner.

The detailed assumptions made in the calculation of the revenue costs are detailed below.

- Staffing cost increases are based on the greater capacity of a re-provided cancer centre such as inpatient beds, chairs and Linacs.
- Facilities staffing cost increases are based on the greater capacity noted above.
- An additional increase in radiotherapy and facilities staffing costs for option B3 has been included at 10%, due to the decentralised nature of this option and the additional costs that this will result in.
- The main driver of the non-pays increase noted is drug growth. This is based on the greater capacity noted above.
- Facilities non-pays cost growth is driven by the increased footprint.
- Incremental eHealth revenue costs are estimated based on anticipated capital costs. This is to be further assessed in the OBC.

Depreciation costs are not included in the table above but are estimated to be £34m annually for option B2 and £35m annually for option B3. Depreciation is based on a useful life of 60 years for buildings and 10 years for equipment. It is assumed to be funded from an additional Scottish Government non-core allocation, to be confirmed through the OBC process.

5.2.2 High/ Low Revenue Cost Estimation

It is noted that the estimated revenue costs associated with each of the short-listed options are sensitive to factors that are subject to uncertainty. A sensitivity analysis has been completed for each option to determine the estimated high/ low revenue cost when the ECC is operating at full capacity.

The assumptions made in the calculation of the high/ low costs are detailed below:

5.2.2.1 Low:

- Reduction of 10% of mid incremental revenue costs

It is also noted that there may be additional efficiencies and associated revenue cost saving that may arise as a result of this project and the associated service transformation. These will be researched as the business case develops and quantified and included in the financial models where possible.

5.2.2.2 High:

- Increase of 10% of mid incremental revenue costs

Revenue costs will continue to be refined through the OBC and FBC process and funding remains to be identified.

5.2.3 Revenue cost allocation

Revenue costs associated with the reprovision of the ECC are proposed to be split between the partner boards: NHS Lothian, NHS Borders, NHS Dumfries and Galloway and NHS Fife.

The allocation of revenue costs between boards noted below is based on 2019 activity identified for the review of the service model – it is for indicative purposes only at this stage. These are based on the mid-cost revenue estimated and require to be reviewed and agreed with regional partners as the detailed costings develop. These represent incremental revenue costs when the ECC is operating at full capacity.

Figure 101: Revenue cost allocation – (£k)

Board Share of Costs	%	£K
Lothian	85.9	42,172
Fife	6.0	2,946
Borders	3.3	1,620
Dumfries & Galloway	3.3	1,620
Total	1.5	736
	100.0	**49,094**

5.3 Overall Affordability

The capital costs detailed above are predicted to be funded through traditional capital funding and it is anticipated this will be provided by a specific allocation from the Scottish Government.

The revenue costs shown in this section are high level estimates for indicative purposes, and the assumptions behind them are stated in section 5.2.1. The configuration of services, and supporting staff models, will be defined further through detailed options appraisal at OBC. Affordability will be a key consideration, and detailed engagement will take place through existing regional forums including the Regional Directors of Finance, with approval by these groups a mandatory part of the OBC Governance group.

Further work is required to understand the costs that will be incurred through additional demand under a do nothing option, and the true additionality of the new facility. Assumptions are prudent at this stage and do not include developments which are anticipated to have a favourable impact on cancer expenditure, including the impact of genomic testing as these are as yet unclear. Development of a supporting revenue model through OBC will take account of developments in this field.

This project has been prioritised by NHS Lothian and the estimated costs are included in the NHS Lothian Property and Asset Five Year Investment Plan. However capital affordability will be determined by availability of a Scottish Government funding source and procurement route.

All costs will continue to be refined through the OBC and FBC process.

5.3.1 Fundraising

NHS Lothian Charity, the official charity of NHS Lothian, is dedicated to improving health and enhance healthcare experiences for everyone. They empower NHS Lothian to do more above core delivery through the key priority objectives of:

- Enhanced patient and carer experience
- Improved clinical outcomes for patients
- Improved staff wellbeing and professional development

- Improved community health / reduced inequality

NHS Lothian Charity has previously supported the Edinburgh Cancer Centre in the above areas and commit to continuing to do so through utilising historic endowment funds and building strong relationships with a variety of donors who wish to support the ECC's current and future patients and staff.

We previously worked in partnership with NHS Lothian and a private donor to greatly enhance the Haematology Centre in ECC. In addition to the enhanced patient and staff experience, it allowed us to demonstrate our ability to identify and support high value donations and relationships for the future. Working in partnership with the ECC to show the impact of donors' support will give NHS Lothian Charity a strong position to develop and launch an additive capital fundraising campaign that supports a new facility or resources in the future.

6 The Management Case

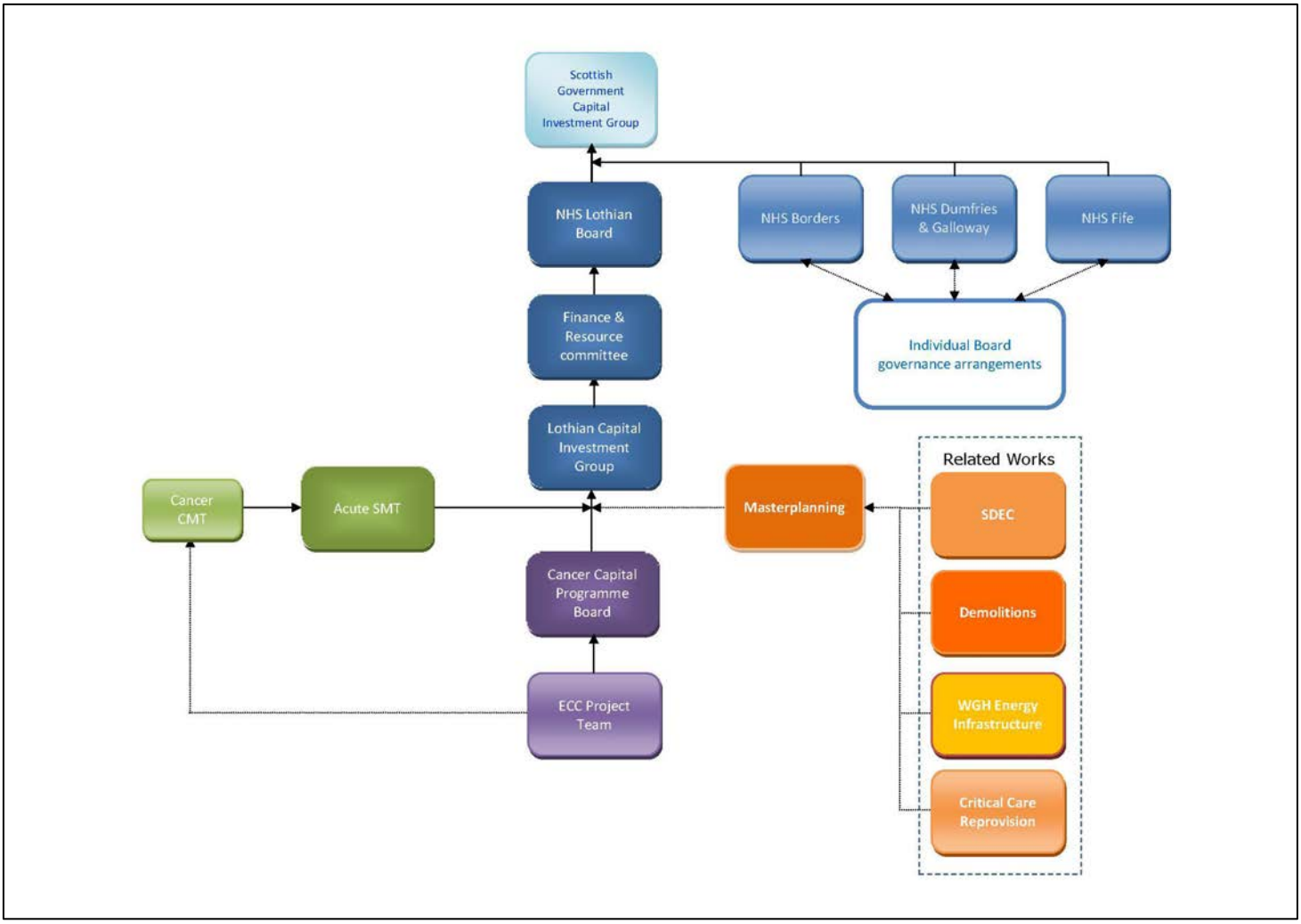
The purpose of the Management Case is to demonstrate that NHS Lothian is capable of successfully delivering the Edinburgh Cancer Centre Project.

The management and governance surrounding the project is of the utmost importance to NHS Lothian. Good governance, defined approval processes, robust project management and clear routes for escalating issues are essential as well as implementing lessons learned from previous capital projects across Scotland.

6.1 Project Governance Arrangements

The project organisational governance and reporting arrangements are shown in Figure 102 below. The diagram sets out how these relate to each other in terms of the project organisation.

Figure 102: Project governance structure



The project governance organogram show in Figure 102 above has been developed to take the project forward at this stage. Each phase of the project will require different groups within the structure to perform specific roles. NHS Lothian may augment the structure with other relevant stakeholders as the project progresses.

6.1.1 Programme Board

The NHS Lothian Deputy Chief Executive is the Senior Responsible Officer (SRO) and "client", with overall direction and leadership of the project. Final decision-making authority on technical and contractual issues will rest with the SRO.

The Cancer Centre Programme Board (CCPB) is a strategic group responsible for ensuring that a dedicated, qualified and sufficiently resourced Project Team is in place to lead the delivery of the programme and that a robust project governance structure has been established that clearly links to the governance arrangements of the NHSL Board. The Director of Finance, Director of Capital Planning and Projects, Western General Hospital Site Director, Senior Programme Director, Programme Director, General Manager for Cancer Services, Associate Medical Director for Cancer Services and Senior Capital Programme Managers alongside other key stakeholders are all sitting members of the Programme Board. The Regional Director of Planning represents the interests of the other Boards in the South East Scotland Cancer Network.

The NHS Lothian Board has considerable experience in the delivery of large value capital projects, most recently the Royal Hospital for Children and Young People (RHCYP + DCN) and East Lothian Community Hospital. The CCPB also oversees the delivery of the Oncology Enabling projects at the Western General Hospital in conjunction with the strategic plan for the Masterplan.

The Cancer Capital Programme Board came into existence in June 2018. It meets regularly, no less than 6 times per year and this frequency will likely increase on approval of the IA.

Figure 103: Cancer Capital Programme Board Membership

Cancer Capital Programme Board Role	Individual	Capability and Experience
Deputy Chief Executive / SRO (Chair)	Jim Crombie	Executive Director with 35+ years of healthcare experience. SRO roles for major projects in last 10 years. Member of NHS Lothian Executive Leadership Team and NHS Board.
Site Director – Western General Hospital (Deputy Chair)	Chris Stirling	Senior NHS manager with 27 years' experience in acute hospital management roles in NHS Scotland and NHS England. Experience of a variety of capital projects and service transformation and quality improvement programmes.
Senior Programme Director	Brian Currie	Construction professional, project manager and chartered architect with 40 years' experience in the property and construction sectors in Scotland. Project Director for the RHCYP and DCN Capital Programme in Edinburgh since 2009.
Programme Director	Colin Adam	Chartered Architect, Adjudicator and Project Manager with 25 years post qualification experience in the property and construction sectors across the United Kingdom. Extensive experience in the design and delivery of Healthcare, Education and Cultural projects.
Senior Programme Manager	Hania Klinge	Capital Programme Manager with building services engineering and APM qualifications and 10+ years of

Cancer Capital Programme Board Role	Individual	Capability and Experience
		experience in managing NHS Lothian capital programmes and projects. Most recently a project director for the Oncology Enabling Programme and associated projects at WGH.
Senior Programme Manager	Sorrel Cosens	NHS Project Manager with 20 years of experience of NHS capital projects including business case development and governance, capital planning, third sector engagement and commissioning. Most recently a PM on the Royal Hospital for Children and Young People and Department of Clinical Neurosciences (2008-2021).
General Manager, Cancer Services Strategic Partnership Manager, CRUK Scotland Centre	Denise Calder	Senior NHS Manager with 19 years' experience in acute hospitals management roles in NHS England and NHS Scotland. 10 years' experience of managing Specialist Regional Cancer and Palliative Care Services. Experience of leading development of wide range of cancer facilities. 2.5 years' experience of developing partnerships between the NHS, Academia, Industry, PPI and third sector to improve equity of access to care in Clinical Trials.
Associate Medical Director, Cancer Services	Colette Reid	Palliative Medicine consultant with 30+ years of working in acute hospitals and 23 years' experience of working with patients with cancer. 15 years' experience of clinical leadership roles.
Clinical Leads	Leanne Whyte, Clinical Project Manager	Registered nurse of 22 years with 18 years in Cancer Services. Varied experience in Acute Oncology, Breast Unit and Haematology. 7 years as Senior Charge Nurse within Acute Oncology and over 2 years as Inpatient Clinical Services Manager in the private sector.
	Linda Carruthers, Head of Oncology Physics	Medical Physicist with over 10 years' experience of clinical and technical input into radiotherapy capital equipment and infrastructure projects.
	Moray Kyle, Consultant Oncologist	Consultant Clinical Oncologist with 3 years' experience, specialising in neuro-oncology, cranial stereotactic radiotherapy, and paediatric radiotherapy. Appointed Clinical

Cancer Capital Programme Board Role	Individual	Capability and Experience
		Director in April 2022, having been Deputy Clinical Director prior to this and the clinical lead for oncology inpatient ward services.
	Oliver Young, Consultant Breast Surgeon	Consultant Breast Surgeon with 10 years' experience and 5 years as Clinical Director of one of Europe's busiest breast units. Surgical lead for South East Scotland Breast Screening Programme.
	Angus Broom, Consultant Haematologist	Haematologist at ECC for 9 years and Stem Cell Programme Director for South East Scotland for 7 years.
	Heather Tait, Clinical Service Manager	Operational Service Manager for Oncology.
	Nicola McCloskey-Sellar, Clinical Service Manager	Operational Service Manager for Haematology and Palliative Care.
Director of Pharmacy	Melinda Cuthbert	Licensed pharmacist for over 26 years with 22 of these years in an acute hospital setting including cancer clinical pharmacy practice and SCAN Pharmacy Lead remit. Pharmacy Acute Service Lead with service redesign, quality improvement and smaller scale capital project experience.
Director of Capital Planning & Projects	Iain Graham	Director of Capital Planning for over 10 years with significant experience of the oversight and delivery of capital projects.
Director of Finance	Craig Marriott	Deputy Director of Finance for the past 9 years and prior to that Director of Finance at NHS Dumfries and Galloway for 8 years. 30 years of senior NHS finance experience.
Associate Director Infection Prevention & Control	Lindsay Guthrie	Associate Director Infection Prevention & Control since 2021. Registered nurse with 30 years of experience in a variety of acute clinical settings. 19 years as an IPC Specialist Nurse at Board and National level. Masters level qualification and other accredited learning in Engineering aspects of IPC and IPC in the Built Environment.

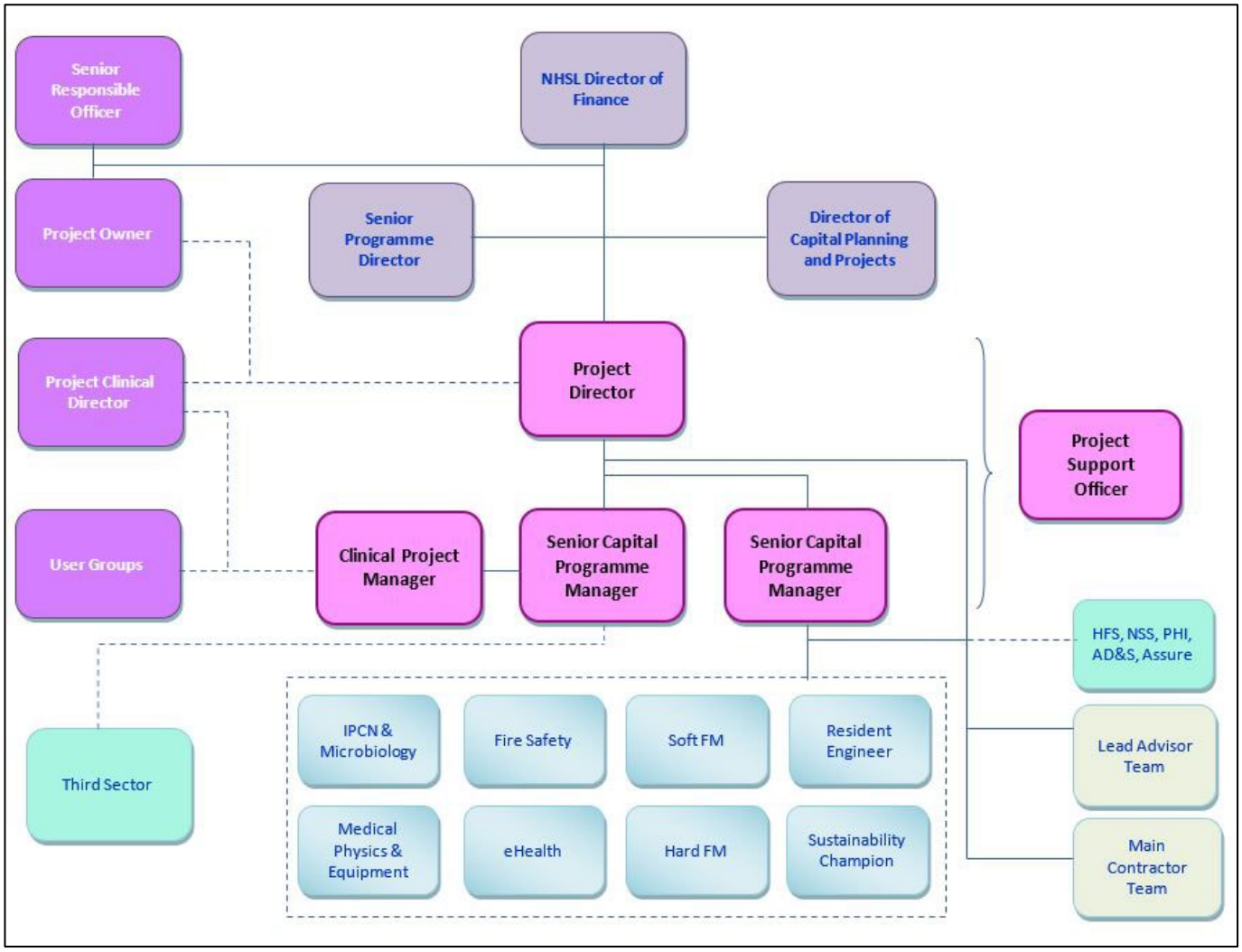
6.2 Project Management

6.2.1 Project Team

NHS Lothian have formed an experienced Project Team to finalise this Initial Agreement. The intention is that this team will remain in place, expanding further throughout the development of the Outline and Full Business Cases and continue through to the delivery of the Edinburgh Cancer Centre. The anticipated final project team structure is shown in Figure 104 below.

Internal support to the Board's project team will be provided from within NHS Lothian IPCT, Fire Safety, by Resident Engineer, Health and Safety, Medical Physics, eHealth and Soft and Hard FM teams.

Figure 104: Project organisational structure



Additional support from external stakeholders other than the Regional Boards, will also be sought where relevant, in particular from: Health Facilities Scotland, National Services Scotland, NHS Assure, Health Protection Scotland (HPS), Authorising Engineers, independent validators, and other statutory authorities.

Lead Advisor team consisting of Project Management Service, Cost Advisor and the technical design team will be appointed at the outset of the OBC stage to assist the NHS Lothian's project team to provide project management duties as well as an exemplar design for the project through RIBA Stage 2: Concept Design. This appointment can be made via Frameworks Scotland 3 initiative or alternative public sector procurement route if the former is not available.

In addition, the NEC Supervisor appointment will be made from the OBC stage, possibly as part of the Lead Advisor appointment, to provide the NEC Supervisor duties. It is anticipated that an independent technical verifier will also be employed at pre construction stage to provide a peer review of the exemplar design – either as part of this selection, or a separate appointment. This is intended to provide independent assurance that the emerging design and finally executed facility is fully compliant with all current and relevant Statutory and Healthcare requirements and guidance. It is considered essential that this level of supervision and assurance is provided and that the integration of these duties begins early enough to fully inform the agreed testing and commissioning regimes.

The procurement route for the appointment of the Lead Advisor team is currently being considered with the obvious options being Frameworks Scotland initiative or alternative public sector procurement route. Discussions with HFS colleagues have been initiated and will continue as this IA passes through its governance stages.

A CDM Coordinator will also be appointed during the OBC stage, independent to the Principal Designer, to provide H&S advice as well as advise the Programme Director and Programme Managers on their Client duties under the CDM Regulations. It is also the intention to appoint an independent Clerk of Works reporting directly to the Project Director for the construction stage.

The roles and responsibilities of each of the project team members, together with other project stakeholders, will be detailed in the Project Execution Plan document which will be produced in early OBC stage and developed further in collaboration with the Lead Advisor and future Main Contractor as the project progresses.

7 Conclusion

The Strategic Assessment for this proposal (included in Appendix 1) scored 23 (weighted score) out of a possible maximum score of 25.

The evidence base as contained in this Initial Agreement confirms that this score remains valid.

The Edinburgh Cancer Centre remains the number one priority for NHS Lothian capital investment.

[The proposal is supported by the South East Cancer Network, and NHSL Lothian has secured the approval of NHS Borders, Dumfries and Galloway and Fife.

The Initial Agreement is approved by NHS Lothian Finance and Resources Committee on behalf of the NHS Board.]

Edinburgh
Cancer Centre
Capital Development

NHS Lothian
Initial Agreement
Appendices

Project Owner: Chris Stirling, Site Director WGH

Project Sponsor: James Crombie, Deputy Chief Executive, NHS Lothian

Date: 20 June 2022

Version: 01

Document Control

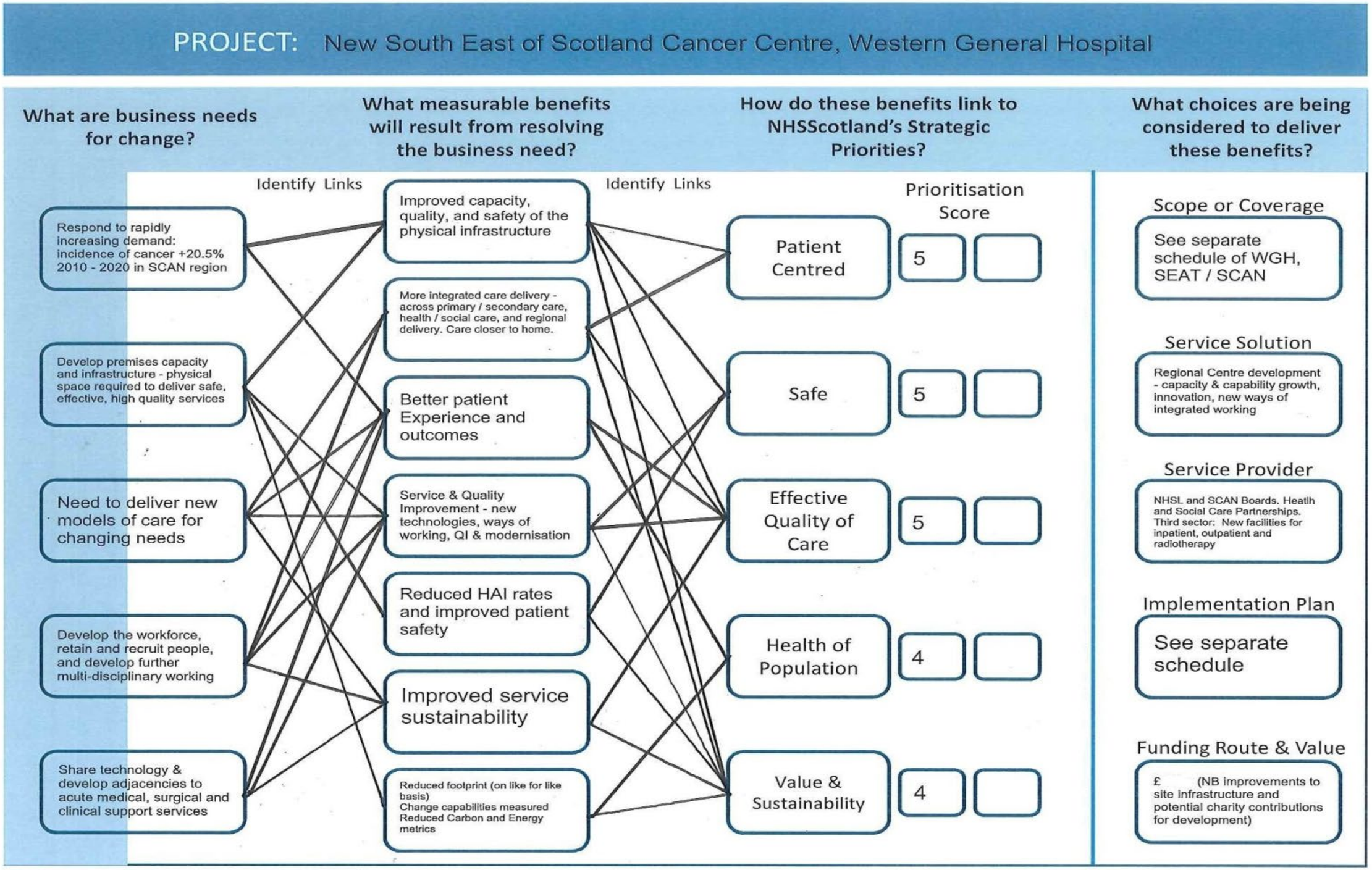
Title:	Initial Agreement Appendices, Edinburgh Cancer Centre Capital Development at the Western General Hospital
Owner:	Sorrel Cosens, Senior Programme Manager, NHS Lothian

Version History

Version	Date	Author(s)	Comments:
1	20/06/2022	Karolina Gibula	First draft set up

Contents

Appendix 1: Strategic Assessment



Appendix 2: Digest of Strategies / Strategic Fit relevant to this proposal

National Strategies	
Quality Strategy, 2010	**Safe –** Any building design will provide adequate space for safe treatment that meets all applicable healthcare standards. **Person Centred -** Patient focused/holistic approach to providing cancer care. Where possible, providing care as daycase/outpatient (rather than inpatient) to benefit the patient by allowing them to return home during or after their treatment, increasing the time they can spend with family and allowing them the opportunity to self-care in a non-clinical environment whilst having the support of the service should they require it. Providing care closer to home where clinically appropriate and financially viable to do so – high quality service model provided across the region. **Effective -** Reducing the cost of treatment by providing it as daycase/outpatient and therefore reducing bed occupancy. Reducing current inefficiencies of working and maximising on economies of scale by designing a building around a redesigned service model to support the delivery of waiting times targets. **Efficient-** Improvement in patient pathways by reducing length of wait through re-designed patient pathways and optimum service adjacencies. Future proofed service with improved service capacity and performance. **Equitable-** Reducing health inequalities by providing timely access to a wide range of specialty therapies and trials closer to home for patients in the South East Region. Providing equitable access to the most innovative cancer therapies for patients in the South East Region. **Timely -** Improvement in patient pathways by reducing length of wait through re-designed patient pathways and optimum service adjacencies. Providing access to early diagnostics, detection and treatment to improve cancer outcomes.
2020 Vision for Health and Social Care, 2011	Transformation of Cancer service delivery for the patients of South East Scotland, with a focus on prevention, anticipation and supported self-management. Treatment will be delivered in a daycase setting whenever possible. Where this is not possible there will be a focus on ensuring that people get back into their home or community environment as soon as appropriate, with minimal risk of re-admission. Whatever the setting, care will be provided to the highest standards of quality and safety, with the patient at the centre of all decisions.

National Strategies	
	This vision was supplemented by the Nursing 2030 Vision, published in 2017. It outlines a plan to prepare the nursing workforce to meet the needs of the population, now and in the future by focusing on personalising care, enhancing knowledge and promoting health in wellbeing.
Beating Cancer, Ambition and Action 2016	A transformed clinical model will have a focus on early cancer detection and diagnosis through direct access to diagnostics and a focus on the role of imaging in accurate and timely diagnosis of cancer. Improved capacity will provide better access to timely safe and effective care for patients across the Region. Services and clinical trials will be planned and delivered locally wherever possible. Collaborative approach to expansion of services and trials available locally for patients in the South East region. A diverse sustainable workforce is key to service delivery across the region. Recruitment and retention strategies to be developed to include career development opportunities and potential inclusion of a training and education facility. Focus on living with and beyond cancer with access to individually tailored patient information, support and advice, patient education and access to palliative care. Results of the National Cancer Patient Experience Survey will be used to inform the way services are provided including a focus on the availability of emotional and psychological patient support. Access to high quality, accurate data via an integrated Regional Cancer Information Programme will be an essential part of patient centred care. Research will be embedded into the service to give patients access to and opportunity to participate in appropriate clinical trials. Overall, there will be a focus on reducing health inequalities and providing patient centred care.
Beating Cancer, Ambition and Action 2016 (Updated, 2020)	**Smoother patient journeys** - a transformed clinical model with a focus on early cancer diagnosis through direct access to diagnostics and the role of imaging in accurate and timely diagnosis of cancer. Improved capacity will provide better access to timely safe and effective care for patients across the Region. **'Prehabilitation'** – Holistic patient approach through a wellness programme, patient education and empowerment. **Treatment** - Consistency and equity of treatment access for patients across the South East of Scotland with services planned and delivered locally wherever possible. **Best care and support for all people with and beyond cancer** – working closely with third sector organisations to provide access to individually tailored patient information, support and advice, patient education and access to palliative care. **Whole system actions** - Integration of clinical research and trials with cancer services through physical co-location and service model collaboration.

National Strategies	
	Using data for improvement – Develop Phase II of the South East Scotland Cancer Information Programme from 2021 to provide a comprehensive Regional Cancer Information Service.
Recovery and Redesign: Cancer Services – Action plan, December 2020	**Adopt a 'Once for Scotland' approach, where appropriate, to cancer services**. This will see the same prioritisation and delivery of services is used across Scotland, helping ensure patients across Scotland receive equitable access to care and treatment. **Create smoother and more efficient patient pathways**, from initial referral and diagnosis to the personalised care and support received after treatment, with the aim of improving both outcomes and experience throughout an individual's journey. **Integrate innovative solutions** to cancer services as we continue to learn from the impact COVID-19 has had on the NHS; improving access to cancer services, both remotely and in person, and minimise the impact on waiting times. The plan commits to incorporate the new ways of managing cancer pathways and services across NHS Scotland that have emerged as a result of COVID-19, with headline actions including: • Early Cancer Diagnostic Centres (ECDEC) • Single Point of Contact Pilots • Digital Pre-habilitation Resource • Establishment of Scottish Cancer Network – supporting once for Scotland approach
NHSScotland Recovery Plan , 2021	The five year plan to recover from the pandemic further emphasis the points made in the 2016 Beating Cancer and 2020 Recovery and Redesign Action Plan.
Framework for Effective Cancer Management, 2018, and updated in 2021	Guidance for Cancer Teams across NHS Scotland to improve and sustain performance of the National Cancer Standards. NHS Lothian has completed a gap analysis of current services and pathways against the refreshed framework and it is the work of the Scheduled Care Recovery Board and Cancer Recovery Board to take forward the 8 Key Elements outlined below and address inconsistency in application across tumour groups and pathways: 1. Corporate Responsibility 2. Optimal Referral 3. Initiating the Pathway 4. Dynamic Tracking and Escalation 5. Optimal Diagnostics 6. Effective MDT 7. Treatment 8. Collective Strength It is the work of the Cancer Recovery Board to implement the resulting action plan, reporting to the NHS Lothian Scheduled Care Recovery Board.

National Strategies	
A Fairer, Healthier Scotland: 2017-2022	The transformed clinical model focuses on the need for long term prevention of health conditions, better equity and better access to services across the region to reduce health inequalities. By adopting a holistic patient approach inequality in health can be reduced through a wellness programme, patient education and empowerment. The service provided will continue to be of high quality, continually improving, efficient and responsive to patient's needs. The building design and construction will improve access to green space and reduce Scotland's carbon footprint. The service will be redesigned bearing in mind the principle of everyone having a fairer share of the opportunities, resources and confidence to live longer, healthier lives.
Realistic Medicine 2015/16, Realising Realistic Medicine 2016/17, Personalising Realistic Medicine 2017/18	Transformation of the clinical service across the region provides an opportunity to build a personalised approach to care and reduce unnecessary variation in practice and outcomes. Continuous improvement and innovation are key components of an efficient and sustainable service model. Service models designed around the person/patient to achieve a better understanding of their preferences and values, then using our experience and clinical judgement to deliver true evidence-based medicine in a personalised way. Creating environments where staff feel valued, respected and supported. Understanding the challenges faced by our staff to improve recruitment and retention.
The Modern Outpatient 2017-2020	The importance of harnessing digital technology, promoting collaboration between primary and secondary care and redesigning patient pathways will be highlighted through any re-design. A reduction in the number of outpatient appointments delivered in hospital will allow resource to be diverted to more efficient use as well as allowing patients to be seen in the right place at the right time.
Scotland's National Strategy for Economic Transformation, 2022	This proposal assists in the delivery of the five main streams of action: Entrepreneurial People and Culture; New Market Opportunities; Productive Business and Regions; Skilled Workforce and A Fairer and More Equal Society. Specific links with this are articulated in the wider benefits section of this document using the Scottish Government's National Performance Framework to provide a structure to the identification, incorporation and assessment of the wider economic benefits and demonstrate the benefit of the proposal to the communities and economy of South East Scotland. Key aims are to drive productivity and deliver a net zero economy while reducing poverty and improving life chances.

National Strategies	
NHS Scotland Staff Governance Standard 2012	A diverse sustainable workforce is key to service delivery across the Region. This will be achieved by ensuring that staff are; • well informed; • appropriately trained and developed; • involved in decisions; • treated fairly and consistently, with dignity and respect, in an environment where diversity is valued; and • provided with a continuously improving and safe working environment, promoting the health and wellbeing of staff, patients and the wider community. Future workforce models will be designed around these principles with the input of the local Partnership Forum alongside the appropriate Board Committees.

NHS Lothian	
Better Cancer Outcomes in Lothian 2015-2020	The proposed clinical model takes account of the increasing demand for cancer services across the South East of Scotland with a focus on prevention and tackling cancer inequalities as well as the need for integrated care to be delivered across primary, secondary and social care and regionally across the South East Region. Service changes will take into account the rapid pace of technological change and need to modernise cancer care based on evidence, best practice and innovation. Models will be developed to deliver care in the right place and in a way that is appropriate to particular needs with mechanisms for continued patient involvement in cancer service planning.
NHS Lothian Corporate Objectives 2018-19 to 2022-23	This programme of work seeks to address the following: o *Improve quality, safety and patient experience* by providing services in a clinically appropriate environment o *Improve Access to Care and Treatment* by meeting the 62 and 31 day targets o *Improve the experience of our staff* by designing a facility which takes the holistic needs of staff into account and prioritising staff development through training and career planning o *Achieve greater financial sustainability and value* by maximising the opportunities from working with our Regional Partners to deliver a sustainable resource model o *Develop workforce plans including workforce supply* by attracting specialist staff to Scotland with the promise of a career, not just a job, highlighting workforce challenges to gain support from Scottish Government regarding training needs and providing a training and education hub for the benefit of the region and Scotland o *Maximise the potential for innovation and technology to deliver transformational change* by incorporating the opportunities offered by innovation and technology into the service and building design

NHS Lothian	
	o *Work with Regional and National partners to support transformational change* on national service planning, workforce planning, service sustainability and outreach models of care
NHS Lothian Quality Strategy 2018 – 2023	During the process of transforming pathways for cancer patients we will ensure that; • Improvement ideas can be tested • Leaders devote time to encouraging local testing and development • All staff are involved in developing improvement priorities and ideas • There is a focus on patient and population needs and wishes in all improvement work • There is constant learning, sharing and embedding of new knowledge from all improvement activities • We explicitly measure and realise the financial gains of better quality • We move to more integrated health and social care quality management • We adopt quality management universally to support everything we do.
Living and Dying Well in Lothian – Lothian's Palliative and End of Life Care Strategy 2010-2015	The proposed Clinical Model will support the approach to Palliative Care planning and delivery by; • Working with people with **Long Term Conditions** to make sure that the need for palliative care is identified as part of routine care at the earliest stage appropriate, helping people to plan, direct and be actively involved their own care • Adopting the **Palliative Care Approach** from as early a stage as is agreed appropriate. The palliative care approach seeks to maximise quality of life, by maintaining good symptom control, offering holistic assessment including family and carers needs, and seeks to agree choices around treatment options, place of care and preferred place of death. • Planning for and managing **end of life care** in the last days of life in a tightly co-ordinated and structured manner. Two specific elements of the model that support this are: 1/Enhanced Supportive Care – routine involvement of Hospital Specialist Palliative Care Services (HSPCS) for all patients across the region living with metastatic cancer whether currently receiving anti-cancer treatments or best supportive care including active management of difficult symptoms and sufficient access to interventional anaesthetics and radiology. 2/ Proactive identification of patients with palliative care needs via MDT attendance, joint ward rounds, and involvement in acute admissions and oncology assessment areas to extend the reach and impact of the HSPCS on improved quality of patient care and experience.

NHS Lothian	
Chief Medical Officer for Scotland – Annual Report: 2020-2021 **Build Back Fairer: The COVID-19 Marmot Review, 2020**	The Chief Medical Officer for Scotland notes the urgent need for Scotland, and therefore NHS Lothian, to plan recovery from the pandemic recognising the principles outlined in this report. • the pre-existing socio-economic inequalities in our society led to the disproportionately high number of deaths from COVID-19 in our disadvantaged communities; • as we recover from the pandemic our nation's health must be the government's top priority; • strong links exist between the economy and population health; it is, therefore, important that we create a more sustainable economy as we recover from the pandemic; • to reduce health inequalities and build back fairer from the pandemic, multi-sector action from all levels of government is needed and we must create long-term policies which support equity; • investment in public health is vital to mitigate the impact of the pandemic on health and health inequalities.

Appendix 3: Stakeholders List

STAKEHOLDERS GROUPS
INTERNAL STAKEHOLDERS – NHS Lothian
All staff groups and professions: clinical, administrative and support functions
Staff on the WGH site
Medical Staff Committee
WGH Site Management Team
Acute Senior Manager Team
Regional and Scottish Ambulance Service Managers (Planning)
Finance Department
Quality Improvement Department
Human Resources Department
Communications Department
Lothian Partnership Forum
Strategic Planning Department & Strategic Planning Committee
Finance and Resources Committee
Lothian Capital Investment Group
Cancer Capital Programme Board
WGH Energy Programme Board
Renal Project Group (completed 2021)
RHSC & DCN Programme Board (completed 2021)
Cancer Enabling & Haematology Project Working Groups (Haematology completed 2021)
Cancer Clinical Management Team
Edinburgh Cancer Centre Project Team
Regional Service Model Review Steering Group
NHS Lothian Board
INTERNAL STAKEHOLDERS – Regional Services
South-east Scotland Cancer Network (SCAN)
Regional Cancer Advisory Group Regional Cancer Planning Group Regional Cancer Strategy Group East Region Programme Board
NHS Dumfries & Galloway Board NHS Fife Board NHS Borders Board
Health Innovation South East Scotland (HISES)
EXTERNAL STAKEHOLDERS
Patients
Relatives and carers
Volunteers
Patient Councils
Members of the public, including neighbourhood and local community groups
Voluntary and third sector organisations: NHS Lothian Charity (formerly Edinburgh and Lothian Health Foundation) Maggie's Edinburgh (presence on site)

Macmillan Cancer (presence on site) Cancer Research UK (presence on site) Fight Against Cancer Edinburgh (FACE) Scottish Cancer Foundation Breast Cancer Now Kidney Research UK Wellcome Trust (presence on site)
Politicians (community council, local authority, Scottish Government)
The media (print, broadcast, online and social)
National NHS Boards and Bodies: National Service Scotland (NSD), including - NHS National Specialist and Screening Services Division - Health Facilities Scotland - NHS Assure NHS 24 NHS Health Scotland Healthcare Improvement Scotland Scottish Health Council Public Health Scotland
Lothian Health and Care System Edinburgh Integration Joint Board Midlothian Integration Joint Board East Lothian Integration Joint Board West Lothian Integration Joint Board Edinburgh Health and Social Care Partnership Midlothian Health and Social Care Partnership East Lothian Health and Social Care Partnership West Lothian Health and Social Care Partnership Primary Care — local practices and/or Area Committees for e.g. GPs, Dentists, Pharmacists
University of Edinburgh
Architecture & Design Scotland
Police
Armed Services
Scottish Fire and Rescue

INDIVIDUAL STAKEHOLDERS	ROLE
PATIENTS AND PATIENT REPRESENTATION	
DS	Patient (Fife)
IT	Patient (Borders)
JK	Patient (Lothian)
KM	Patient (D&G)
KS	Patient (Lothian)
MW	Carer (Lothian)
PR	Patient (Lothian)
GM	Patient (Lothian)
Marie McIlwraith	Scottish Health Council

Leslie Marr	Scottish Health Council
Emma Ashman	Healthcare Improvement Scotland
NHS LOTHIAN STAKEHOLDERS	
Alex Joyce	Employee Director
Alistair Mack	Partnership Lead for Corporate Services
Andrew Coull	Consultant Physician
Angela Bentley	Palliative Care Consultant
Angela Timoney	Director of Pharmacy
Angus Broom	Clinical Director, Haematology
Audrey Campbell	Clinical Nurse Manager, Oncology
Bobby Alikhani	SCAN Network Manager
Brian Cook	Medical Director, Acute Services
Brian Currie	Senior Programme Director
Caroline Whitworth	Associate Medical Director, Renal
Carolyn Bedi	Consultant Oncologist
Catherine Elliott	University Senior Stakeholder
Catherine Stretton	Registrar
Catriona McLean	Clinical Director, Oncology
Catriona Rostron	Associate Nursing Director
Chris Stirling	WGH Site Director
Claire Palmer	Clinical Nurse Manager for Oncology
Clare Cartwright	Strategic Programme Manager
Clifford Burden	Manager of Communication
Colette Reid	Associate Medical Director
Colin Adam	Programme Director, Capital Planning & Projects
Colin Briggs	Director of Strategic Planning
Craig Marriott	Director of Finance
David Cameron	University of Edinburgh/Consultant Oncologist
David Hood	General Manager of Medicine
Debbie Reilly	WGH Partnership Lead
Denise Calder	General Manager, Cancer Services
Dorothy Boyle	Network Manager
Elaine Reilly	Head of Therapeutic Radiotherapy
Emma Amor	Assistant Finance Manager
Emma Chalmers	Senior Charge Nurse, Ward 8
Evelyn Connolly	Senior Charge Nurse, SJH
Ewan Brown	Medical Oncologist, SACT Lead
Fiona Taylor	Senior Charge Nurse, Ward 11
George Curley	Director of Operations and Facilities
Geraldine Marsh	Associate Nurse Director, NHS Lothian
Gillian McAuley	Executive Nurse Director
Hania Klinge	Senior Programme Manager
Hannah Cairns	Chief Allied Health Professional, Midlothian Health & Social Care Partnership
Heather Dalrymple	Lead Cancer Care Pharmacist
Heather Rebecca	Breast Care Nurse
Heather Tait	Clinical Service Manager, Cancer Services
Huw Roddie	Consultant Haematologist

Iain Graham	Director of Capital Planning and Projects
Immy Tricker	Finance Manager, PAMF
Jacquie Balkan	Regional Workforce Planning Manager, NHS Lothian
Jacquie Campbell	Director of Acute Services
Jane Curran	Charge Nurse, Outpatient Dep.
Jane McNulty	Nurse Director, Acute Services
Janet Clarke	Director of Breast Screening
Janis Butler	Director of HR
Jenny Fleming	General Manager of Surgical Services
Jill Dempsey	Finance Partner
Jim Crombie	Deputy Chief Executive
Jin Werne Hah	Lead Pharmacist, WGH/SCAN
Joanna Henderson	Clinical Service Manager
Judith Mackay	Director of Communication
Julie Read	Charge Nurse, Ward 1
Karolina Gibula	Project Support Officer
Kate MacDonald	Network Manager, SCAN
Kathryn Anderson	Consultant Physician, Medicine of Elderly
Larry Hayward	Associate Medical Director, Cancer Services
Leanne Whyte	Clinical Commissioning Manager
Lesley Dawson	Consultant Oncologist
Lesley Shepherd	Charge Nurse, CAU
Lesley-Jean Rugg	Superintendant Radiographer
Linda Carruthers	Head of Oncology Physics
Lindsay Guthrie	Associate Director Infection Prevention & Control
Lyndsay Cameron	Strategic Programme Manager
Lynne Ziarelli	Communications Manager
Mark Hamilton	Service Coordinating Manager
Mark Zahra	Clinical Oncologist
Martin Egan	Director of eHealth
Matthew King	Consultant
Melinda Cuthbert	Associate Director of Pharmacy
Michele Lorimer	Organisational Development Consultant
Morag Moore	Senior Charge Nurse, Ward 3
Moray Kyle	Clinical Director for Oncology
Niall Carey	Assistant Service Manager, Cancer Services
Nick Bradbury	Capital Finance Manager
Nick McAlister	Head of Workforce Planning, NHS Lothian
Nicola McCloskey-Sellar	Clinical Service Manager
Oliver Young	Clinical Director, Breast Services
Patricia Brooks-Young	Palliative Care Nurse
Peter McLoughlin	Strategic Programme Manager
Professor Tim Walsh	Director of Innovation, NHS Lothian and Health Innovation South East Scotland
Rosetta O'Malley	Charge Nurse, Ward 6
Sally Clive	Consultant Oncologist
Sarah Jane Sutherland	Lead HAI Scribe Advisor
Sarah Keir	Consultant Stroke Physician

Sheena Kerr	Lead Pharmacist, WGH
Shelley-Marie O'Hare	Clinical Nurse Manager, Oncology
Simon Malzer	Public Involvement Manager
Sorrel Cosens	Senior Programme Manager
Stefan Symeonides	Consultant Medical Oncologist
Steve Elliott	Clinical Nurse Manager, Haematology
Susan Goldsmith	Director of Finance
Tracey Gillies	Executive Medical Director, NHS Lothian
Wilma Jack	Project Co-ordinator
REGIONAL PARTNERS	
Anne Bain	Oncology Nursing & Cancer Services Manager, NHS D&G
Euan Macleod	Strategic Planning and Commissioning Manager, NHS D&G
Fiona O'Brien	GP and Primary Care Lead for Cancer and Palliative Care, NHS D&G
Ken Donaldson	Associate Medical Director, NHS D&G
Maria Bews-Hair	NHS D&G
Viv Gration	Deputy Head of Strategic Planning, NHS D&G
Gareth Clinkscale	Director of Acute Services, NHS Borders
Kirk Lakie	Deputy Hospital Manager, Planned Care & Commissioning, NHS Borders
Lynda Taylor	Macmillan Nurse Consultant and Lead Clinician in Cancer, NHS Borders
Lynne McCutcheon	Clinical Manager for Cancer Services, NHS Borders
Steven Litster	Service Manager, NHS Borders
Christopher McKenna	Medical Director, NHS Fife
Claire Dobson	Director of Acute Services, NHS Fife
Dr Neill Storrar	Cancer Framework Clinical Lead for Oncology and Haematology
Dr Robert Cargill	Associate Medical Director, NHS Fife
Fiona Forrest	Head of Pharmacy, NHS Fife
Frances Quirk	Assistant R&D Director, NHS Fife
Gemma Couser	Head of Quality and Clinical Governance, NHS Fife
Gillian Wilson	SACT Nurse Consultant, NHS Fife
Kathy Nicoll	Cancer Transformation Manger, NHS Fife
Miriam Watts	General Manager, Emergency Care, NHS Fife
Murdina Macdonald	Macmillan Lead Cancer Nurse, NHS Fife
Shirley-Anne Savage	Service Manager, Emergency Care, NHS Fife
Shona Cheyne	Lead Cancer Pharmacist, NHS Fife
Jan McClean	Director of Regional Planning, East Region NHS
NATIONAL NHS BODIES	
Neil Gardiner	Capital Projects Advisor, NHS National Services Scotland, Health Facilities Scotland
3rd SECTOR PARTNERS	
Andrew Anderson	Maggie's Centre
Alan Ormiston	FACE
Elaine Gray	Macmillan Centre Service Manager
Jane Ferguson	Director of Funding, NHS Lothian Charity
Nicola Sinclair	Head Fundraiser, NHS Lothian Charity

Appendix 4: AEDET Matrix

HFS 20200818 AEDET Refresh Edin Cancer Centre IA v0_2 .xlsx

Benchmark | **Edinburgh Cancer Centre** | **AEDET Refresh** v1.2 Mar 2016

Functionality

	Use	Weight	Score	Notes
A.01	The prime functional requirements of the brief are satisfied	1	1	YES
A.02	The design facilitates the care model	2	1	YES
A.03	Overall the design is capable of handling the projected throughput	1	1	NO
A.04	Work flows and logistics are arranged optimally	1	1	
A.05	The design is sufficiently flexible to respond to clinical /service change and to enable expansion	2	1	YES
A.06	Where possible spaces are standardised and flexible in use patterns	1	1	
A.07	The design facilitates both security and supervision	1	1	YES
A.08	The design facilitates health promotion and equality for staff, patients and local community	1	1	YES
A.09	The design is sufficiently adaptatable to external changes e.g. Climate, Technology	1	1	YES
A.10	The benchmarks in the Design Statement in relation to building USE are met	0		

	Access	Weight	Score	Notes
B.01	There is good access from available public transport including any on- site roads	2	3	YES
B.02	There is adequate parking for visitors/ staff cars/ disabled people	2	1	YES
B.03	The approach and access for ambulances is appropriately provided	1	3	
B.04	Service vehicle circulation is well considered and does not inappropriately impact on users and staff	1	2	YES
B.05	Pedestrian access is obvious, pleasant and suitable for wheelchair/ disabled/ impaired sight patients	2	1	YES
B.06	Outdoor spaces wherever appropriate are usable, with safe lighting indicating paths, ramps, steps etc.	1	2	YES
B.07	Active travel is encouraged and connections to local green routes and spaces enhanced	1	1	YES
B.08	Car parking and drop-off should not visually dominate entrances or green routes	1	3	YES
B.09	The benchmarks in the Design Statement in relation to building ACCESS are met	0		

	Space	Weight	Score	Notes
C.01	The design achieves appropriate space standards	1	1	
C.02	The ratio of usable space to total area is good	1	1	
C.03	The circulation distances travelled by staff, patients and visitors is minimised by the layout	2	1	
C.04	Any necessary isolation and segregation of spaces is achieved	1	1	
C.05	The design maximises opportunities for space to encourage informal social interaction & wellbeing	2	1	
C.06	There is adequate storage space	1	1	
C.07	The grounds provided spaces for informal/ formal therapeutic health activities	1	2	
C.08	The relationships between internal spaces and the outdoor environment work well	2	1	
C.09	The benchmarks in the Design Statement in relation to building SPACE are met	0		

Build Quality

	Performance	Weight	Score	Notes
D.01	The building and grounds are easy to operate	1		
D.02	The building and grounds are easy to clean and maintain	1		
D.03	The building and grounds have appropriately durable finishes and components	1		
D.04	The building and grounds will weather and age well	1		
D.05	Access to daylight, views of nature and outdoor space are robustly detailed	1	0	
D.06	The design maximises the opportunities for sustainability e.g. waste reduction and biodiversity	1	0	
D.07	The design minimises maintenance and simplifies this where it will be required	1		
D.08	The benchmarks in the Design Statement in relation to PERFORMANCE are met	0		

	Engineering	Weight	Score	Notes
E.01	The engineering systems are well designed, flexible and efficient in use	1		
E.02	The engineering systems exploit any benefits from standardisation and prefabrication where relevant	1		
E.03	The engineering systems are energy efficient	1		
E.04	There are emergency backup systems that are designed to minimise disruption	1		
E.05	During construction disruption to essential services is minimised	1		
E.06	During maintenance disruption to essential healthcare services is minimised	1		
E.07	The design layout contributes to efficient zoning and energy use reduction	1		

	Construction	Weight	Score	Notes
F.01	If phased planning and construction are necessary the various stages are well organised	0		
F.02	Temporary construction work is minimised	0		
F.03	The impact of the building process on continuing healthcare provision is minimised	0		
F.04	The building and grounds can be readily maintained	0		
F.05	The construction is robust	0		
F.06	Construction allows easy access to engineering systems for maintenance, replacement & expansion	0		
F.07	The construction exploits opportunities from standardisation and prefabrication where relevant	0		
F.08	The construction maximises the opportunities for sustainability e.g. waste and traffic reduction	0		
F.09	The construction contributes to being a good neighbour	0		
F.10	Infection control risks for options, design and construction recorded/ minimised using HAI Scribe	0		

Impact

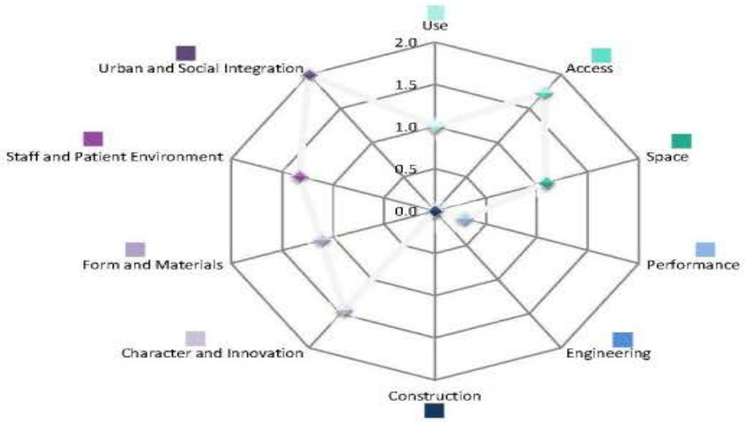
	Character and Innovation	Weight	Score	Notes
G.01	There are clear ideas behind the design of the building and grounds	1	1	
G.02	The building and grounds are interesting to look at and move around in	1	2	yes
G.03	The building, grounds and arts design contribute to the local setting	1	1	yes
G.04	The design appropriately expresses the values of the NHS	1	1	yes
G.05	The project is likely to influence future designs	1	2	
G.06	The design provides a clear strategy for future adaptation and expansion	2	1	
G.07	The building, grounds and arts design contribute to well being and a sustainable therapeutic strategy	2	2	YES
G.08	The benchmarks in the Design Statement in relation to CHARACTER & INNOVATION are met	0		

	Form and Materials	Weight	Score	Notes
H.01	The design has a human scale and feels welcoming	1	2	
H.02	The design contributes to local microclimate, maximising sunlight and shelter from prevailing winds	1	1	
H.03	Entrances are obvious and logical in relation to likely points of arrival on site	2	1	
H.04	The external materials and detailing appear to be of high quality and are maintainable	2	1	
H.05	The external colours and textures seem appropriate and attractive for the local setting	1	1	yes
H.06	The design maximises the site opportunities and enhances a sense of place	2	1	
H.07	The benchmarks in the Design Statement in relation to FORM & MATERIALS are met	0		

	Staff and Patient Environment	Weight	Score	Notes
I.01	The design reflects the dignity of patients and allows for appropriate levels of privacy	2	1	
I.02	The design maximises the opportunities for daylight/ views of green natural landscape or elements	2	2	yes
I.03	The design maximises the opportunities for access to usable outdoor space	1	2	
I.04	There are high levels of both comfort and control of comfort	1	1	
I.05	The design is clearly understandable and wayfinding is intuitive	1	1	
I.06	The interior of the building is attractive in appearance	1	1	
I.07	There are good bath/ toilet and other facilities for patients	1	1	
I.08	There are good facilities for staff with convenient places to work and relax without being on demand	2	1	
I.09	There are good opportunities for staff, patients, visitors to use outdoors to recuperate/ relax	1	2	
I.10	The benchmarks in the Design Statement in relation to STAFF & PATIENT ENVIRONMENTare met	0		

	Urban and Social Integration	Weight	Score	Notes
J.01	The height, volume and skyline of the building relate well to the surrounding environment	1	3	
J.02	The facility contributes positively to its locality	2	2	
J.03	The hard and soft landscape contribute positively to the locality	1	3	
J.04	The overall design contributes positively to neighbourhood and is sensitive to passers-by	1	2	
J.05	There is a clear vision behind the design, its setting and outdoor spaces	2	1	
J.06	The benchmarks in the Design Statement in relation to INTEGRATION are met	0		

AEDET Refresh Benchmark Summary



	Benchmark
Use	1.0
Access	1.7
Space	1.1
Performance	0.3
Engineering	0.0
Construction	0.0
Character and Innovation	1.4
Form and Materials	1.1
Staff and Patient Environment	1.3
Urban and Social Integration	2.0

Weighting	=	Target
2	=>	5 - 6
1	>	3 - 4
0	<	3

NHS National Services Scotland

Health Facilities Scotland

HFS 20200818 AEDET Refresh Edin Cancer Centre IA v0_2 .xlsx

AEDET Refresh v1.2 Mar 2016

Edinburgh Cancer Centre

Benchmark

Ref	Note
A.01	Fragmented services. Pharmacy unable to deliver service. Radiotherapy average, but no clinical rooms - Score '3.' Clinical Trials '1' - can't deliver service.
A.02	Reception waiting areas Ward 1 'miserable.' No space for Palliative Care, contemplative, peaceful etc.
A.03	Fragmented services mean care model can't be delivered. Patient - good service but pressure mounting on staff to deliver same standard of care.
A.04	Fragmented services throughout whole of WGH campus. Inpatient areas distal to CC services. Staff have to work harder to deliver the service.
A.05	Lack of physical space, both current and potential future expansions. Reached limit. Infrastructure will not support any more expansion in this area.
A.06	
A.07	RIE warnings to 'Keep possessions Close' & locking door while procedures are being performed - alarming that this is necessary. See original recorded notes.
A.08	Ward 1 waiting area unwelcoming, bare, insufficient whch availability. Patient using whchs they are not familiar with. Sensory impairment considers e.g. lighting.
A.09	No Wifi in Ward 1 - although some treatment chairs do now have ports.
A.10	Facilitating the enablement of new treatments is fundamental to future service. Futuring-proofing from 'expansion' perspective also. Flexibility in use of space.
B.01	Site reasonably well served by public transport - if transport is available. Travelling from Fife and Border regions can be expensive. See original recorded notes.
B.02	1' unanimous. Quantity and access to parking poor: Staff parking £5.20/day. Staff parking stressful - selective what staff can use the parking available on site.
B.03	Very tight spaces for ambulances and there is a fragmentation of services. e.g. patients dropped off at In-patient wards instead of Cancer Centre.
B.04	FM problems in Outpatients in particular - no segregation and can be disruptive to the service.
B.05	Fragmented services, poor wayfinding/ signage, complex levels. Pavements either non existant or only on one side of the road.
B.06	Most outdoor spaces used for carparking. Patient: benches and tubs of flowers nice outside CC but not private, with traffic passing constantly.
B.07	No secure bicycle storage, showers etc to encourage staff. No safe cycle routes.
B.08	Entrances to Radiotherapy and Ward 1 are situated on the road and also directly opposite each other and can get congested. See original recorded notes.
B.09	Fragmented services - lone works raising security concerns. Ward 11 - monitoring extremely difficult. See original recorded notes
C.01	
C.02	
C.03	
C.04	
C.05	
C.06	
C.07	Face Garden' most used spaces by patients because it is visible and easily accessible. 'Spiritual' Care: dank, miserable, smells.
C.08	Fragmentation especially over different levels across services. Difficulties in using wheelchairs across site.
C.09	
D.01	Not asked
D.02	Not asked
D.03	Not asked
D.04	Not asked
D.05	Just being able to see daylight is beneficial. Too many long dim corridors. Important to staff as well as patients.
D.06	Improved policies and implementation req. Use and disposal of domestic plastics a particular concern. Concerns as to how this is achieved in majority of rooms.
D.07	Not asked
D.08	Not priortised as all questions were not scored/ discussed.
E.01	IT completely out of date. Frequent problems with overheating and can't relieve this fans due to Infect Control. Air Con has been installed but has never worked.
E.02	
E.03	
E.04	
E.05	
E.06	One lift to access services - needs long detour if it is not working.
E.07	
F.01	
F.02	
F.03	
F.04	
F.05	
F.06	
F.07	
F.08	
F.09	
F.10	
G.01	No clarity.
G.02	Clock tower and similar building character appreciated.
G.03	Depends which side you approach from the site from. Mature trees of great value. Anything of value needs to be properly maintained.
G.04	Some of views from the wards are stunning to city of Edinburgh/ castle.
G.05	Complimentary therapies and garden spaces that have been created should be promoted. TCT should be a good example of how other services are run.
G.06	
G.07	Tiny elements are there, but not predominant in the service/ environment.
G.08	
H.01	Small elements work. Entrance to OPD - fair. Ward 1 - needs much improvement.
H.02	
H.03	
H.04	
H.05	Breast Unit balconies a good feature.
H.06	
H.07	
I.01	Generally good design of toilets; accessible for patients. Quantity an issue.
I.02	Small elements work - eg Face Garden. Wards have large windows but prone to overheating. Staff experiences & some patient journeys can be quite dismal.
I.03	Wards can access outdoor space allbeit on different level. Breast Unit balconies.
I.04	
I.05	
I.06	
I.07	Ward 2 no space in medical emergencies, e.g. bathrooms.
I.08	Not enough WCs etc for patients. Staff wellbeing facilities not fit for purpose. This is a priority for morale and encouraging staff retainment and recruitment.
I.09	Some small elements. Spaces are there but not enough facilities.
I.10	
J.01	
J.02	Parking often in front of local residents' property is a problem. Mature Trees a 'plus.'
J.03	
J.04	
J.05	See previous comments. The evolution of site - there is now no clarity in the design. Varying levels, complex wayfinding.
J.06	

Weighting
High = High Priority to the Project (2)
Normal = Desirable (1)
Zero = Not Applicable (0)

Scoring
Virtually Total Agreement (6)
Strong Agreement (5)
Fair Agreement (4)
Little Agreement (3)
Hardly Any Agreement (2)
Virtually No Agreement (1)
Unable to Score (0)

Guidance for Initial Agreement Stage

1 AEDET Target (& Benchmark) to be set at IA Stage and must be submitted for NDAP as ANNEX 1 to the Design Statement
2 The OBC and FBC Stage AEDET reviews will be monitored against IA Stage. Boards will require to provide an explanation of the reason for deviation from the IA Target
3 The note section to be completed to provide further briefing information
4 If any of the criteria is weighted as zero (not applicable) a note should state the reason for this
5 Boards may add project specific criteria. A note must be provided stating the reason for this.
6 Key actions arising from AEDET discussions to be recorded

Ref	Actions	by date	Owner	Completed
	A.07 Consider what can be done now with regards to security:			
	(A.07 continued) - lone working, panic button provision.			
	A.08 Combatting health inequalities. e.g. lack of single bedrooms.			

Health Facilities Scotland

NHS National Services Scotland

HFS 20200818 AEDET Refresh Edin Cancer Centre IA v0_2 .xlsx

Target **Edinburgh Cancer Centre** **AEDET Refresh** v1.1 Feb 2016

Functionality

Use

		Weight	Score	Notes
A.01	The prime functional requirements of the brief are satisfied	1	4	
A.02	The design facilitates the care model	2	5	
A.03	Overall the design is capable of handling the projected throughput	1	4	
A.04	Work flows and logistics are arranged optimally	1	4	
A.05	The design is sufficiently flexible to respond to clinical /service change and to enable expansion	2	5	
A.06	Where possible spaces are standardised and flexible in use patterns	1	4	
A.07	The design facilitates both security and supervision	1	4	
A.08	The design facilitates health promotion and equality for staff, patients and local community	1	4	
A.09	The design is sufficiently adaptatable to external changes e.g. Climate, Technology	1	4	
A.10	The benchmarks in the Design Statement in relation to building USE are met	2	5	

Access

		Weight	Score	Notes
B.01	There is good access from available public transport including any on- site roads	2	5	
B.02	There is adequate parking for visitors/ staff cars/ disabled people	2	5	
B.03	The approach and access for ambulances is appropriately provided	1	4	
B.04	Service vehicle circulation is well considered and does not inappropriately impact on users and staff	1	4	
B.05	Pedestrian access is obvious, pleasant and suitable for wheelchair/ disabled/ impaired sight patients	2	5	
B.06	Outdoor spaces wherever appropriate are usable, with safe lighting indicating paths, ramps, steps etc.	1	4	
B.07	Active travel is encouraged and connections to local green routes and spaces enhanced	1	4	
B.08	Car parking and drop-off should not visually dominate entrances or green routes	1	4	
B.09	The benchmarks in the Design Statement in relation to building ACCESS are met	2	5	

Space

		Weight	Score	Notes
C.01	The design achieves appropriate space standards	1	4	
C.02	The ratio of usable space to total area is good	1	4	
C.03	The circulation distances travelled by staff, patients and visitors is minimised by the layout	1	4	
C.04	Any necessary isolation and segregation of spaces is achieved	1	4	
C.05	The design maximises opportunities for space to encourage informal social interaction & wellbeing	2	5	
C.06	There is adequate storage space	1	4	
C.07	The grounds provided spaces for informal/ formal therapeutic health activities	1	4	
C.08	The relationships between internal spaces and the outdoor environment work well	1	4	
C.09	The benchmarks in the Design Statement in relation to building SPACE are met	2	5	

Build Quality

Performance

		Weight	Score	Notes
D.01	The building and grounds are easy to operate	1	4	
D.02	The building and grounds are easy to clean and maintain	1	4	
D.03	The building and grounds have appropriately durable finishes and components	1	4	
D.04	The building and grounds will weather and age well	1	4	
D.05	Access to daylight, views of nature and outdoor space are robustly detailed	1	4	
D.06	The design maximises the opportunities for sustainability e.g. waste reduction and biodiversity	1	4	
D.07	The design minimises maintenance and simplifies this where it will be required	1	4	
D.08	The benchmarks in the Design Statement in relation to PERFORMANCE are met	2	5	

Engineering

		Weight	Score	Notes
E.01	The engineering systems are well designed, flexible and efficient in use	1	4	
E.02	The engineering systems exploit any benefits from standardisation and prefabrication where relevant	1	4	
E.03	The engineering systems are energy efficient	1	4	
E.04	There are emergency backup systems that are designed to minimise disruption	1	4	
E.05	During construction disruption to essential services is minimised	1	4	
E.06	During maintenance disruption to essential healthcare services is minimised	1	4	
E.07	The design layout contributes to efficient zoning and energy use reduction	1	4	

Construction

		Weight	Score	Notes
F.01	If phased planning and construction are necessary the various stages are well organised	1	4	
F.02	Temporary construction work is minimised	1	4	
F.03	The impact of the building process on continuing healthcare provision is minimised	1	4	
F.04	The building and grounds can be readily maintained	1	4	
F.05	The construction is robust	1	4	
F.06	Construction allows easy access to engineering systems for maintenance, replacement & expansion	1	4	
F.07	The construction exploits opportunities from standardisation and prefabrication where relevant	1	4	
F.08	The construction maximises the opportunities for sustainability e.g. waste and traffic reduction	1	4	
F.09	The construction contributes to being a good neighbour	1	4	
F.10	Infection control risks for options, design and construction recorded/ minimised using HAI Scribe	1	4	

Impact

Character and Innovation

		Weight	Score	Notes
G.01	There are clear ideas behind the design of the building and grounds	1	4	
G.02	The building and grounds are interesting to look at and move around in	1	4	
G.03	The building, grounds and arts design contribute to the local setting	1	4	
G.04	The design appropriately expresses the values of the NHS	1	4	
G.05	The project is likely to influence future designs	1	4	
G.06	The design provides a clear strategy for future adaptation and expansion	2	5	
G.07	The building, grounds and arts design contribute to well being and a sustainable therapeutic strategy	2	5	
G.08	The benchmarks in the Design Statement in relation to CHARACTER & INNOVATION are met	2	5	

Form and Materials

		Weight	Score	Notes
H.01	The design has a human scale and feels welcoming	1	4	
H.02	The design contributes to local microclimate, maximising sunlight and shelter from prevailing winds	1	4	
H.03	Entrances are obvious and logical in relation to likely points of arrival on site	2	5	
H.04	The external materials and detailing appear to be of high quality and are maintainable	2	5	
H.05	The external colours and textures seem appropriate and attractive for the local setting	1	4	
H.06	The design maximises the site opportunities and enhances a sense of place	2	5	
H.07	The benchmarks in the Design Statement in relation to FORM & MATERIALS are met	2	5	

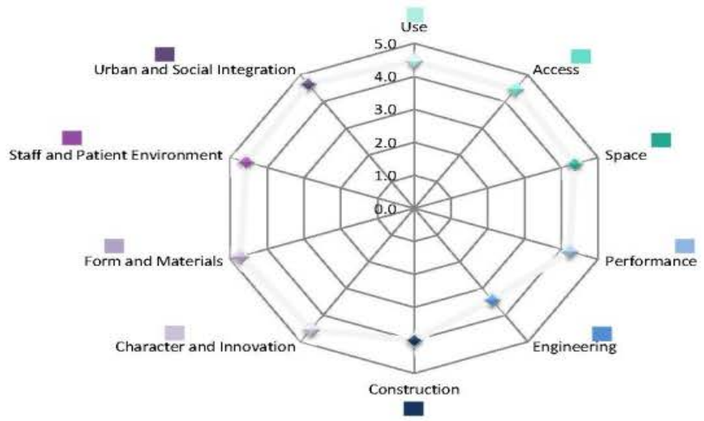
Staff and Patient Environment

		Weight	Score	Notes
I.01	The design reflects the dignity of patients and allows for appropriate levels of privacy	2	5	
I.02	The design maximises the opportunities for daylight/ views of green natural landscape or elements	2	5	
I.03	The design maximises the opportunities for access to usable outdoor space	1	4	
I.04	There are high levels of both comfort and control of comfort	1	4	
I.05	The design is clearly understandable and wayfinding is intuitive	1	4	
I.06	The interior of the building is attractive in appearance	1	4	
I.07	There are good bath/ toilet and other facilities for patients	1	4	
I.08	There are good facilities for staff with convenient places to work and relax without being on demand	2	5	
I.09	There are good opportunities for staff, patients, visitors to use outdoors to recuperate/ relax	1	4	
I.10	The benchmarks in the Design Statement in relation to STAFF & PATIENT ENVIRONMENTare met	2	5	

Urban and Social Integration

		Weight	Score	Notes
J.01	The height, volume and skyline of the building relate well to the surrounding environment	1	4	
J.02	The facility contributes positively to its locality	2	5	
J.03	The hard and soft landscape contribute positively to the locality	1	4	
J.04	The design contributes to being a good neighbour and is sensitive to neighbours and passers- by	1	4	
J.05	There is a clear vision behind the design, its setting and outdoor spaces	2	5	
J.06	The benchmarks in the Design Statement in relation to INTEGRATION are met	2	5	

AEDET Refresh Target Summary



	Target
Use	4.5
Access	4.5
Space	4.4
Performance	4.2
Engineering	3.4
Construction	4.0
Character and Innovation	4.5
Form and Materials	4.7
Staff and Patient Environment	4.6
Urban and Social Integration	4.7

Weighting	=	Target
2	=>	5 - 6
1	>	3 - 4
0	<	3

HFS 20200818 AEDET Refresh Edin Cancer Centre IA v0_2 .xlsx

AEDET Refresh v1.1 Feb 2016

Edinburgh Cancer Centre

Target

Ref	Note
A.01	
A.02	
A.03	
A.04	
A.05	
A.06	
A.07	
A.08	
A.09	
B.01	
B.02	
B.03	
B.04	
B.05	
B.06	
B.07	
B.08	
B.09	
C.01	
C.02	
C.03	
C.04	
C.05	
C.06	
C.07	
C.08	
C.09	
D.01	
D.02	
D.03	
D.04	
D.05	
D.06	
D.07	
D.08	
E.01	
E.02	
E.03	
E.04	
E.05	
E.06	
E.07	
F.01	
F.02	
F.03	
F.04	
F.05	
F.06	
F.07	
F.08	
F.09	
F.10	
G.01	
G.02	
G.03	
G.04	
G.05	
G.06	
G.07	
G.08	
H.01	
H.02	
H.03	
H.04	
H.05	
H.06	
H.07	
I.01	
I.02	
I.03	
I.04	
I.05	
I.06	
I.07	
I.08	
I.09	
I.10	
J.01	
J.02	
J.03	
J.04	
J.05	
J.06	

Weighting
High = High Priority to the Project (2)
Normal = Desirable (1)
Zero = Not Applicable (0)

Scoring
Virtually Total Agreement (6)
Strong Agreement (5)
Fair Agreement (4)
Little Agreement (3)
Hardly Any Agreement (2)
Virtually No Agreement (1)
Unable to Score (0)

Guidance for Initial Agreement Stage

1. AEDET Target (& Benchmark) to be set at IA Stage and must be submitted for NDAP as ANNEX 1 to the Design Statement
2. The OBC and FBC Stage AEDET reviews will be monitored against IA Stage. Boards will require to provide an explanation of the reason for deviation from the IA Target
3. The note section to be completed to provide further briefing information
4. If any of the criteria is weighted as zero (not applicable) a note should state the reason for this
5. Boards may add project specific criteria. A note must be provided stating the reason for this.
6. Key actions arising from AEDET discussions to be recorded

Ref	Actions	by date	Owner	Completed

Health Facilities Scotland

AEDET-IA Target

HFS 20200818 AEDET Refresh Edin Cancer Centre IA v0_2 .xlsx

AEDET Refresh v1.1 Feb 2016

Edinburgh Cancer Centre

Summary

Category	Benchmark	Target	OBC	FBC	POE
Use	1.0	4.5	0.0	0.0	0.0
Access	1.7	4.5	0.0	0.0	0.0
Space	1.1	4.4	0.0	0.0	0.0
Performance	0.3	4.2	0.0	0.0	0.0
Engineering	0.0	3.4	0.0	0.0	0.0
Construction	0.0	4.0	0.0	0.0	0.0
Character and Innovation	1.4	4.5	0.0	0.0	0.0
Form and Materials	1.1	4.7	0.0	0.0	0.0
Staff and Patient Environment	1.3	4.6	0.0	0.0	0.0
Urban and Social Integration	2.0	4.7	0.0	0.0	0.0

NHS National Services Scotland

Health Facilities Scotland

Summary Progress

Appendix 5: Examples of Service Transformation Achievements in Lothian 2018 – 2022

Domain	Achievement
Performance & Information	Cancer data sharing agreement and Information Governance Framework agreed by all SCAN boards.
	Cancer Information Service and Dataloch have agreed to develop a shared operating model and basis for closer future collaboration.
	A partnership model agreement has been developed between University of Edinburgh and NHS Lothian to ensure that there is a clear legal framework for working together and with industry to develop further capability in this field.
	Information & Performance Service expanded and integrated
	PROSECCA Trial led by ECC using prostate cancer data from across Scotland with the aim of modelling outcomes and leading to personalised treatments.
Service Redesign	New Acute Oncology and CUP service at SJH
	New Enhanced Supportive Care Service at SJH
	New expanded SACT Unit at Queen Margaret Hospital, Dunfermline
	New expanded Haem/Onc Cancer Satellite Unit at SJH
	New supportive therapies satellite unit at Roodlands Hospital
	New Oral SACT Community dispensing service
	New SACT homecare services
	Introduction of SACT smart scheduling to optimise capacity utilisation
	Implementation of 2m physical distancing whilst reducing waits for SACT
	New Outpatient Stem Cell Transplants service
	New Ambulatory Pumps Service for Haematology
	Expansion of Oncology outreach capacity in Fife
	New GP Straight to Test Service
	New Portacath Service
	New Magseeds Service for breast cancer
	New Rectal VMAT Service New Breast IMRT Service New Upper GI VMAT Service
	New HDR Prostate Brachytherapy Service (first in Scotland)
	Introduction of Deep Inspiration Breath-Hold technique for breast cancer
	New Prostate SABR service in trials
	Expansion of SABR Lung and Oligometastatic SABR service
	7th Linac approved for further expansion of hypofractionated services. (Operational by Dec 2021)
	Superficial X-Ray Unit installed and commissioned for treatment of skin cancers
	New HDR Afterloader and software for treatment planning and delivery installed and commissioned, enabling treatment to a wider range of gynaecological cancer patients
Research	Reconfigured consultant workforce to ensure all can be research active
	Expanded the research programme across all cancer specialties - 13 new trials opened in 2017 and this rose to 45 new trials opened in 2020). - 118 cancer trials now open with 36% being early phase
	Tripled ECC NRS Consultant fellowships
	Opened a new Trials Data Facility in December 2020
	Provided infrastructure to open cancer trials at SJH for the first time in 2019

	Two ECC staff secured Honorary Professor positions with University of Edinburgh, both in Radiotherapy; one a consultant clinical oncologist and the other a radiotherapy physicist.
	Developed a software package in Edge to accurately track drugs cost avoidance through trials and equity of access by postcode.
	Leading National Cancer Trials Remobilisation Group and National Trials Equity of Access Group
	SCRN Team 5 established for Radiotherapy Clinical Trials Management.
Innovation	Robotic surgery introduced for colorectal and urological cancers
	AI introduced for GI referral triage at WGH Cancer Campus
	AI introduced to support regional Breast Screening Service
	Kindocoin - successful SBRI challenge to develop digital currency of social care to initially focus on reducing the number of delayed discharges.
	Submitted funding application to CSO for new CancerApp innovation programme for digitally enabled care (decision pending)
	Several spin out companies developed by Clinical Academics to develop innovative products to support earlier detection, e.g. circulating cfDNA
	First UK centre to use RayPilot and Hypocath to monitor and manage tumour movement during radiotherapy treatment, facilitating SABR treatment for prostate cancer patients within the PRINTOUT Trial
Workforce & Education	Pan-Lothian CNS workforce review completed, all but 2 tumour groups now have access to a CNS
	Macmillan funded expansion of ANP workforce
	Developed a range of advanced practitioner roles such as Prescribing Pharmacists, Consultant Radiographers
	Reconfigured consultant workforce to provide headroom capacity for trials
Buildings	New expanded SACT Unit at Queen Margaret Hospital, Dunfermline
	New expanded Haem/Onc Cancer Satellite Unit at SJH
	New supportive therapies satellite unit at Roodlands Hospital
	SHSC repurposed as a Cancer Education, Performance and Innovation Centre. Made available in Jan 2021 for ECC office staff to safely physically distance
	£13m charitable new Haematology centre due to be completed in June 2021
	£1m charitably funded new Trials Data Centre opened
	Ward 1 LGF repurposing and reconfiguration to facilitate physical distancing completed Jan 2021
	New radioactive iodine suite opened March 2021, improving both patient environment and staff safety
Prevention, detection and diagnosis	GP Straight to Test Service developed in 2019
Strategic Partnerships	Cancer Information Service, Dataloch, UoE and the four SCAN NHS Boards partnership agreement in place with Caldicott approvals
	Strategic Academic Partnerships Manager appointed by UoE to support their active participation in this programme
	Executives of Victorian Comprehensive Cancer Center and Peter Mac providing peer review and support

Appendix 6: Project Benefits Detail

Table 1: Project Benefits

#	Benefit	Details
1	Provision of **care closer to home** improves the **patient experience, reduces emissions, provides skilled employment opportunities in the region** and **reduces health inequalities**	Provision of care closer to home: provide an increased range of treatments in a patient's local area through regional delivery, provision of treatments not currently available in the SCAN region and use of technology to provide digital consultations. Provision of care closer to home reduces the distance that people have to travel - both within the local area and for some patients across the UK. This: - directly reduces emissions through less travel - reduces health inequalities by providing timely access to full range of specialty therapies and trials closer to home - benefits patients through a reduction in the time required to get to treatments and allowing patients to spend more time at home with families, in the community or at work - reduces inequalities by giving patients more options for treatment locally - lowering the cost to the patient of travel, time away from work or childcare - generates skilled jobs in the south east region area - supports flexible working for staff through the use of technology
2	An **improved environment for staff** results in improved **staff recruitment, retention** and **well being,** enhancing **economic participation**	An improved physical environment for staff including wellbeing spaces, technology to enable flexible working, collocation enabling collaboration: - benefits staff wellbeing - improved staff experience reflected in staff recruitment and retention and a reduction is sickness-related staff absence. - provides opportunities to engage with students/ young people - benefits staff recruitment including attracting national/ international talent - provides an environment to enable more training/ development opportunities - standardisation of design increasing staff efficiency and releasing time to focus on patient care
3	A flexible building that can be adapted to safely manage and treat different patient cohorts provides improved **service resilience** and supports a **transformed service model**	An adaptable building and skilled staff benefits service/ pandemic resilience: - highly skilled staff - flexible building suitable for segregation/ treatment of different patient cohorts - increased diagnostic capability
4	Increased ability to provide **precision medicine** through further collaboration with genomic services, building on University relationships and increasing clinical trials -	Increased ability to provide precision medicine (tailored genetic treatments): - link to better patient data - better outcomes - build on link with IGMM (unit genetics) and Human genetic unit to develop and build new treatments to offer to patients and share wider - deepen collaboration with NHS Genomic Services (key link to Centre for Labs and Forensic Services (CLFS) business case)

#	Benefit	Details
	resulting in **better patient outcomes and clinical innovation**	- respond to and participation of implementation of the national Genomics strategy when available
5	Increased opportunities for **clinical trials** leading to **improved outcomes, equitable access ,better patient** and **staff experience** and **closer links between the NHS, academia and industry**	Increased trials capacity gives benefit of: - more patients being able to be involved in trials in different locations - a research active hospital delivers better outcomes for its patients - drives investment/collaboration - improves staff morale, retention and development - inward investment from pharmaceutical companies - both within and outwith the UK
6	**Collocating services** helps streamline patient pathways and aids staff collaboration improving the **patient experience** and **patient outcomes,** and provides synergies and adjacencies that optimise opportunities for research and innovation	The benefits of collocating services in a single area: - ease of collaboration between staff from different disciplines leading to better patient experience and outcomes - improvement in patient pathways by reducing length of wait through optimum service adjacencies - integrated care delivery
7	An **improved physical environment** for patients benefits **safety** and **the patient experience**	An improved physical environment for patients: - adequate space for safe treatment that meets applicable healthcare standards - improved inpatient experience protecting patient privacy and dignity, with provision for control of the personal environment, including reduced disturbance - a reduction in healthcare associated infection through modern design
8	More efficient buildings and reduced travel for treatment drives a **reduction in emissions**	Net zero emissions target: - an efficient building that minimises its impact on the environment and resources in terms of energy consumption and running costs, and its transport strategy - less travel by patients and staff through care closer to home
9	A national infrastructure project drives increased **skilled job opportunities** in the region from construction, R&D and clinical trials activity and associated innovative business growth	Job market benefits will be accrued throughout the project lifecycle: - promoting local employment and capabilities, particularly in the construction phase, through training and placement opportunities - engagement with small and medium sized enterprises and social enterprises - demand for local, national and international skilled staff to develop the clinical trials and R&D offerings - improved socio economic opportunities across the SCAN region by provision of a range of diverse jobs
10	An increase in **research and development** provides opportunities which **attract staff, drive economic innovation** and provide	An increase in opportunities for Research and Development: - attracts staff locally, nationally and internationally - promotes collaborative working with higher education, in particular the University of Edinburgh through co-location with the IGMM and GMU at the WGH site - benefits patients through innovative treatments

#	Benefit	Details
	innovative treatments that **benefit patient experience and outcomes**	- provide staff with more training and development opportunities - benefits the economy through R&D activity supporting innovative companies
11	Future proofed **sustainable service** with capacity to provide **equitable access to healthcare**	Future proofed service with improved service capacity able to provide a sustainable service with a service model built to match demand: - reduction in waiting times (improved access for all) - improved service sustainability (ability to respond to growth) - Improved clinical outcomes through reduced waiting times and fewer cancellations
12	Redesigned patient pathways **improve the patient experience** and **clinical outcomes** and provide **unique opportunities for science and bench to bedside medicine.**	An integrated model of care: - providing access to early diagnostics, detection and treatment through an integrated service model - where possible, providing care as daycase/outpatient (rather than inpatient) to benefit the patient by allowing them to return home during or after their treatment, increasing the time they can spend with family - allowing patients the opportunity to self care in a non-clinical environment where possible, whilst having the support of the service should they require it
13	Ability to use **data driven innovation** to improve patient experience and outcomes through a more linked up data driven service model and provide **innovative business development opportunities**	Incorporation of the use of better data in to the model of care: - link between machines and their data developed to enhance the flow of clinical information between primary and secondary care, and between secondary care providers to reduce duplication of tests and loss of information - use data to expedite the correct decisions for a patient and improve their experience and outcomes. - use data regionally to more rapidly allow peripheral boards and hospitals to access the expertise needed from people in a different physical place - improve efficiency and benefit for patient care - pioneering data driven innovation in the UK/world to drive inward investment and attract staff

Table 2: Benefits mapping to SG National Performance Framework Outcome and indicators

#	Benefit	Mapping to SG Performance Framework National Outcome/ Indicator										
		Children and Young People	Communities	Culture	Economy	Education	Environment	Fair Work and Business	Health	Human Rights	International	Poverty
1	Provision of **care closer to home** improves the **patient experience, reduces emissions, provides skilled employment opportunities in the region** and **reduces health inequalities**	Provision of care closer to home allows parents to spend more time with their children and reduces travel costs they incur: Child wellbeing and happiness Child material deprivation			Reduced travel will result in reduced emissions: Carbon footprint Greenhouse gas emissions	Care closer to home reduces the disruption to young people's education and employment: Young People's participation		Care closer to home allows patients to reduce the time away from employment and provides skilled jobs across the region: Economic participation	Care closer to home provides more opportunities for active travel: Journeys by active travel	Care closer to home responds to the individual patients' requirements: Public services treat people with dignity and respect Quality of public services		Care closer to home reduces travel costs they incur and disruption to their employment: Relative poverty after housing costs Wealth Inequality
2	An **improved environment for staff** results in improved **staff recruitment, retention** and **well being,** enhancing **economic participation**		Incorporation of green space into a reprovision benefits staff and patients physically and mentally: Access to green and blue space	Inclusion of artworks in a reprovided ECC: Attendance at cultural events or places of culture		An improved environment offers more opportunities and space from staff training and development: Workplace learning Skill profile of the population	Alternative energy sources considered in building design: Energy from renewable sources		An improved environment for benefits staff wellbeing: Work related ill health	An improved physical environment provide staff with the space and facilities they need for their health and wellbeing: Public services treat people with dignity and respect		
3	A flexible building that can be adapted to safely manage and treat different patient cohorts provides improved **service resilience** and supports a **transformed service model**	Improved service resilience allows parents to spend more time with their children: Child wellbeing and happiness			Improved service resilience allows patients to reduce the time away from employment: Income inequality Economic growth			Improved service resilience allows patients to reduce the time away from employment: Economic participation	Improved service resilience can help save lives in pandemic events and provide comfort to communities that resilience is there: Healthy life expectancy Mental wellbeing Premature mortality			

#	Benefit	Mapping to SG Performance Framework National Outcome/ Indicator										
		Children and Young People	Communities	Culture	Economy	Education	Environment	Fair Work and Business	Health	Human Rights	International	Poverty
4	Increased ability to provide **precision medicine** through further collaboration with genomic services, building on University relationships and increasing clinical trials - resulting in **better patient outcomes and clinical innovation**	Reducing time in hospital and treatments required benefits children's mental health: Child wellbeing and happiness			Improved outcomes and timely access to treatment allows patients to reduce the time away from employment: Income inequality Economic growth	The use of data and research into new treatments gives staff opportunities to wider their knowledge and skills: Workplace learning Skill profile of the population		Improved treatments and outcome allow patients to engage more in the economy: Economic participation	Increased genetic focussed treatments can benefit outcomes and reduce time spent in hospital: Healthy life expectancy Mental wellbeing Premature mortality	Precision medicine responds to the individual patients' requirements: Public services treat people with dignity and respect Quality of public services		
5	Increased opportunities for **clinical trials** leading to **improved outcomes, equitable access ,better patient** and **staff experience** and **closer links between the NHS, academia and industry**				Increase opportunities for R&D and collaboration: Spend on research and development	The use of clinical trials to research new treatments gives staff opportunities to wider their knowledge and skills: Workplace learning Skill profile of the population		Increase clinical trials portfolio and collaboration between NHS, Uni and private sector: Innovative businesses High growth businesses Economic participation Contractually secure work	Clinical trials involvement can benefit outcomes and provide wider access to innovative treatments: Healthy life expectancy Premature mortality		Clinical trials activity increases the NHS and SCAN area's profile internationally: Scotland's reputation Trust in public organisations International networks	Clinical trials involvement can provide wider access to innovative treatments: Wealth Inequality
6	**Collocating services** helps streamline patient pathways and aids staff collaboration improving the **patient experience** and **patient outcomes,** and provides synergies and adjacencies that optimise opportunities for research and innovation		Provision of care closer to home to help support and develop local areas: Perceptions of local area		Improved outcomes and timely access to treatment allows patients to reduce the time away from employment: Income inequality Economic growth	Collocation of services increases the opportunities for collaboration and staff development: Workplace learning		Improved treatments and outcome allow patients to engage more in the economy: Economic participation	Increased genetic focussed treatments can benefit outcomes and reduce time spent in hospital: Healthy life expectancy Mental wellbeing Premature mortality			

#	Benefit	Mapping to SG Performance Framework National Outcome/ Indicator										
		Children and Young People	Communities	Culture	Economy	Education	Environment	Fair Work and Business	Health	Human Rights	International	Poverty
7	An **improved physical environment** for patient's benefits **safety** and **the patient experience**	Provision an improved environment benefits children and parents through increased privacy and comfort: Child wellbeing and happiness	Incorporation of green space into a reprovision benefits staff and patients physically and mentally: Access to green and blue space	Inclusion of artworks in a reprovided ECC: Attendance at cultural events or places of culture			Alternative energy sources considered in building design: Energy from renewable sources		An improved environment for benefits patient wellbeing: Mental wellbeing	An improved physical environment provides patients with the space and facilities for privacy and dignity: Public services treat people with dignity and respect Quality of public services		
8	More efficient buildings and reduced travel for treatment drives a **reduction in emissions**		Reducing emission will improve air quality: Perceptions of local area		An efficient building can result in net zero emissions: Carbon footprint Greenhouse gas emissions				Reducing emissions can benefits on the population's health: Healthy life expectancy Premature mortality			
9	A national infrastructure project drives increased **skilled job opportunities** in the region from construction, R&D and clinical trials activity and associated innovative business growth	Provision on well paid jobs can provide children with a more stable environment and reduce poverty: Child wellbeing and happiness Child material deprivation	A growth in the job market provide opportunities to local communities: Social Capital		Creation of skilled jobs will drive growth in the economy and improve income equality Income inequality Economic growth	A growth in the job market can provide opportunities for young people: Young people's participation		Reprovision of cancer services will provide job opportunities throughout the project lifecycle - particularly construction and operation: Economic participation Employees on the living wage Contractually secure work	An improved job market can improve opportunities in the community: Mental wellbeing			Skilled job opportunities improve the job market: Relative poverty after housing costs Wealth Inequality

#	Benefit	Mapping to SG Performance Framework National Outcome/ Indicator										
		Children and Young People	Communities	Culture	Economy	Education	Environment	Fair Work and Business	Health	Human Rights	International	Poverty
10	An increase in **research and development** provides opportunities which **attract staff, drive economic innovation,** and provide innovative treatments that **benefit patient experience and outcomes**				Increase opportunities for R&D and collaboration between NHS, Uni and Businesses: Spend on research and development Economic growth	Increase R&D activity provides additional opportunities for staff development: Workplace learning		Increase opportunities for R&D and collaboration between NHS, Uni and businesses: Innovative businesses High growth businesses Economic participation Contractually secure work	R&D can benefit outcomes and provide wider access to innovative treatments: Healthy life expectancy Premature mortality		R&D activity increases the NHS and SCAN area's profile internationally: Scotland's reputation Trust in public organisations International networks	Skilled job opportunities improve the job market: Relative poverty after housing costs Wealth Inequality
11	Future proofed **sustainable service** with capacity to provide **equitable access to healthcare**		Equitable access to healthcare enhances cohesion in communities: Social capital		Improved timely access to treatment allows patients to reduce the time away from employment: Income inequality Economic growth			Improved treatments and outcome allow patients to engage more in the economy: Economic participation	A sustainable service with the required capacity can allow equitable, timely access to treatment: Healthy life expectancy Mental wellbeing Premature mortality	A sustainable service can provide timely equitable access: Public services treat people with dignity and respect Quality of public services		
12	Redesigned patient pathways **improve the patient experience** and **clinical outcomes** and provide **unique opportunities for science and bench to bedside medicine.**	Reducing time in hospital and treatments required benefits children's mental health: Child wellbeing and happiness			Improved outcomes allow patients to reduce the time away from employment: Income inequality Economic growth			Improved treatments and outcome allow patients to engage more in the economy: Economic participation	Streamlined pathways will help provide timely access to treatment: Healthy life expectancy Mental wellbeing Premature mortality	Redesigned pathways respond to the individual patients' requirements: Public services treat people with dignity and respect Quality of public services		

Appendix 6: Project Benefits Detail

ECC – IA

#	Benefit	Mapping to SG Performance Framework National Outcome/ Indicator										
		Children and Young People	Communities	Culture	Economy	Education	Environment	Fair Work and Business	Health	Human Rights	International	Poverty
13	Ability to use **data driven innovation** to improve patient experience and outcomes through a more linked up data driven service model and provide **innovative business development opportunities**	Reducing time in hospital and treatments required benefits children's mental health: Child wellbeing and happiness			Improved outcomes and timely access to treatment allows patients to reduce the time away from employment: Income inequality Economic growth	Data driven innovation provides additional opportunities for staff development: Workplace learning		Data driven innovation provides opportunities for businesses: Innovative businesses High growth businesses	Data driven pathways will help provide timely access to treatment: Healthy life expectancy Mental wellbeing Premature mortality	Data driven pathways respond to the individual patients' requirements: Public services treat people with dignity and respect Quality of public services	Data driven innovation increases the NHS and SCAN area's profile internationally: Scotland's reputation Trust in public organisations International networks	

Table 3: Draft Benefits Register

1. Benefits Register						*2. Prioritisation*
Ref No.	**Benefit**	**Assessment**	**As measured by**	**Baseline Value**	**Target Value**	**Relative Importance**
1	Provision of **care closer to home** improves the **patient experience, reduces emissions, provides skilled employment opportunities in the region,** and **reduces health inequalities**	Qualitatively and Quantitatively	1. Change in number of remote consultations 2. Change in service provision throughout the Region 3. Change in number and distance of patient journeys for treatment 4. Patient satisfaction audits before and after reprovision			
2	An **improved environment for staff** results in improved **staff recruitment, retention** and **wellbeing,** enhancing **economic participation**	Qualitatively and Quantitatively	1. Staff absence, turnover and bank and agency usage 2. Staff satisfaction audits before and after reprovision 3. Monitor environmental / facilities complaints before and after reprovision 4. SG National Indicator: Education/ Workplace learning			
3	A flexible building that can be adapted to safely manage and treat different patient cohorts provides improved **service resilience** and supports a **transformed service model**	Qualitatively and Quantitatively	1. Diagnostic capacity and capability 2. Building flexibility (single rooms and adaptable wards)			
4	Increased ability to provide **precision medicine** through further collaboration with genomic services, building on University relationships and increasing clinical trials - resulting in **better patient outcomes and clinical innovation**	Qualitatively and Quantitatively	1. Specialities using genetic treatments and target cellular therapies 2. Offering access to novel treatment options through expansion of early phase trials programme 3. Change in patient outcomes for those treated using precision medicine			
5	Increased opportunities for **clinical trials** leading to **improved outcomes, equitable access, better patient** and **staff experience** and **closer links between the NHS, academia and industry**	Quantitatively	1. Increase in number of clinical trials undertaken at ECC and across the region 2. Increase in number of NHS patients taking part in clinical trials 3. External investment received before and after reprovision			
6	**Collocating services** helps streamline patient pathways and aids staff collaboration improving the **patient experience** and **patient outcomes,** and provides synergies and adjacencies that optimise opportunities for research and innovation	Qualitatively and Quantitatively	1. Impact on waiting times performance 2. Impact in pathways involving multiple disciplines			

1. Benefits Register						*2. Prioritisation*
Ref No.	**Benefit**	**Assessment**	**As measured by**	**Baseline Value**	**Target Value**	**Relative Importance**
7	An **improved physical environment** for patient's benefits **safety** and **the patient experience**	Qualitatively and Quantitatively	1. Reduction in DATIX incidents 2. Patient satisfaction audits before and after reprovision 3. Compliance with HEI and other relevant standards 4. Comparative levels of Healthcare Associated Infection (HAI) – Infection Control Reports and Audits			
8	More efficient buildings and reduced travel for treatment drives a **reduction in emissions**	Quantitatively	1. SG National Indicator: Economy/ Carbon footprint 2. SG National Indicator: Economy/ Greenhouse gas emissions 3. Reduction in building energy usage 4. Reduction in patient journeys			
9	A national infrastructure project drives increased **skilled job opportunities** in the region from construction, R&D and clinical trials activity and associated innovative business growth	Quantitatively	1. SG National Indicator: Fair work and business/ Economic participation 2. Increase in skilled roles			
10	An increase in **research and development** provides opportunities which **attract staff, drive economic innovation** and provide innovative treatments that **benefit patient experience and outcomes**	Quantitatively	1. SG National Indicator: Fair work and business/ High growth businesses 2. SG National Indicator: Fair work and business/ Innovative Businesses 3. SG National Indicator: Economy/ Spend on Research and Development 4. Cancer Services research portfolio			
11	Future proofed **sustainable service** with capacity to provide **equitable access to healthcare**	Qualitatively and Quantitatively	1. Impact on waiting times performance 2. Reduced number of appointment cancellations			
12	Redesigned patient pathways **improve the patient experience** and **clinical outcomes** and provide **unique opportunities for science and bench to bedside medicine.**	Qualitatively and Quantitatively	1. Patient satisfaction audits before and after reprovision 2. Impact on length of stay a number of treatments delivered as in/ outpatient			
13	Ability to use **data driven innovation** to improve patient experience and outcomes through a more linked up data driven service model and provide **innovative business development opportunities**	Qualitatively and Quantitatively	1. Change in patient outcomes 2. Change in time to progress through patient pathway			

Appendix 7: Risk register

WGH Cancer Centre							
Risk Register - DRAFT							
07 September 2020 - Rev. 3							
			Risk Rating				
Ref No:	Risk Type	Risk Description	Probability (1-5)	Impact (1-5)	Risk Rating (1-25)	Mitigation	Comments
	Pre-construction						
1	Client / Business Risk	The project disrupts day to day business operations for Cancer Services/WGH site wide	5	4	20	Undertake feasibility study to understand services, isolations and demolitions in order to clear the site. Develop construction phase planning via dedicated workshops in due course.	
2	Client / Business Risk	Client doesn't have the capacity or capability to deliver the project	3	4	12	Develop appropriate governance arrangements and develop a competent project team using internal and external resources. Backfill allowance to allow clinical staff to attend. Ensure staff turnaround review and comments for deadlines.	Lessons to be learned from issues encountered during the Department of Clinical Neurosciences (DCN) and Royal Hospital for Children and Young people (RHCYP) capital projects alongside the findings/recommendations from the Queen Elizabeth University Hospital (QEUH) enquiry. Some of the same internal project team is likely to be responsible for delivering the Edinburgh Cancer Centre and will ensure these lessons are learned.
3	Client / Business Risk	The clinical need for change and expected outcomes isn't clearly defined. Difficulty in predicting the future needs.	2	4	8	Set out a plan to engage with service providers to fully understand the service based need for change and the expected outcome from investment. Articulate in business case. Design to ensure flexibility for future changes.	
4	Client / Business Risk	Poor stakeholder involvement results in a lack of support for the project	3	4	12	Prepare and implement an appropriate communication plan which engages with all appropriate stakeholders at appropriate stages of the project. Early engagement vs. Engagement Fatigue. Regional participation could be impacted by various factors.	Funding allocated to NHS Fife and Borders to enable appropriate strategic input into the programme as it develops.
5	Client / Business Risk	Adverse publicity occurs due to an issue with the project	4	4	16	Review the reputational impact of all risks in this register and take action. Communication. Robust and realistic planning/programming. Learn from other projects (e.g. Department of Clinical Neurosciences (DCN) and Royal Hospital for Children and Young people (RHCYP) capital projects)	
6	Client / Business Risk	Capacity - rapidly growing and ageing population, increase in cancer incidence and increase in treatment options exacerbating service pressures Demand for the service does not match the levels planned, projected or presumed.	3	4	12	Plan using national indicators. Implement internal and external engagement sessions to ensure alignment. Commission an external peer review. Regular modelling updated with real time inputs. Differences between cancer types and treatment type. Flexibility within the design. Benchmark against other areas.	Review of population forecasts, both size and age would impact the planned levels.
7	Client / Business Risk	Planned facilities do not meet stakeholder expectations.	3	4	12	Develop design statement and ensure ongoing engagement via AEDET etc measuring the proposals against the brief. Management of expectations. Correct media for engagement. Ensure aspirational expectations - not settling. Acknowledgement that you can't meet everybody's expectations. Communication.	

8	Client / Business Risk	Workforce: 1. Availability of workforce across various professional groups across the South East Region. 2. No timely increase in training places for certain professions and any changes will take time to feed through. 3. Transformed models of care reliant on recruitment and retention of specialist staff across the South East Region.	4	5	20	1. Clearly outline the workforce required identifying current challenges. 2. Develop a comprehensive risk assessed regional workforce plan as part of the outline business case 3. Provide staff training and education facilities	
9	Client / Business Risk	Existing Stakeholder (Edinburgh University) lease arrangements may constrain the proposed master-plan including timing/sequencing.	3	3	9	Arrange regular dialogue meetings to discuss, share and agree plans. Workshop to review alignment of goals - agreed to be scheduled.	
10	Client / Business Risk	Internal and external approvals processes may delay the programme.	3	3	9	Take account of approval processes within the master programme. Early and ongoing engagement and communication.	
11	Client / Business Risk	Availability and experience of a suitable/reliable contractor and supply chain to undertake this size of project in the local market.	3	4	12	To be considered as part of the commercial case within the IA.	
12	Client / Business Risk	Regions unwilling to accept the preferred option or unable to articulate their future requirements impacting upon the scope and success of the Regional model.	3	5	15	Continuous dialogue and colaboration with Regional Partners to ensure agreement on plans proposed.	
13	Client / Business Risk	Lack of ambition results in the loss of potential revenue.	3	3	9	Review the brief with a view for maximising future revenue streams	
14	Client / Business Risk	Failure of IA to gain approval due to: - understatement of socio-economic impact; or - articulating full vision.	2	5	10	Early and regular review of IA between cross section of stakeholders.	
15	Client / Business Risk	COVID-19 - impact on future arrangements and provision.	4	4	16	Engage internally and externally to understand long-term future requirements and adjust the briefing to suit.	
16	Planning / Design Risk	Local community objects to the project	3	4	12	Liaise with planning. Undertake early and ongoing community engagement sessions as part of the planning process.	
17	Planning / Design Risk	Statutory Consents. May fail to acquire or delay in obtaining.	3	4	12	Place brief for planning in place. Ongoing engagement with planning and statutory authorities.	
18	Planning / Design Risk	Information used as part of the strategic & project brief is unpredictable or subject to change.	3	4	12	Commission an external peer review. Develop the clinical and technical briefs as separate workstreams. Implement internal and external engagement sessions to ensure alignment.	
19	Planning / Design Risk	New clinical pathways still not tested which may impact on schedule of accommodation.	4	4	16	Ensure SoA is robust/flexible enough to cope with some change. Start development of new operational policies for clinical brief. Continuous feedback loop.	
20	Planning / Design Risk	The design does not meet the Design Assessment expectations	3	3	9	Undertake self assessments. Resolve any issues arising.	
21	Planning / Design Risk	Failure to design in accordance with statutory requirements and appropriate healthcare guidance. Derogations are not signed off - disagreement with SHTM/HTM.	2	5	10	Appoint a professional and experienced team of designers and contractors. Checking process.	
22	Planning / Design Risk	The design may not reflect the brief and requirements.	2	4	8	Appoint a professional and experienced team of designers and contractors. Carry out design reviews at key stages. Capture comments and resolve prior to entering a subsequent design stage. Exemplar design/reference design. Continuity and appropriateness of reviewers	The potential for all single rooms was discussed,if this was to be implemented day rooms would be required to allow patients the ability to leave their rooms and socialise.
23	Planning / Design Risk	The master-plan may not support the optimum site location for the building - decant of DCN.	3	4	12	Engage with the WGH/NHSL master-planning group.	
24	Planning / Design Risk	Site infrastructure may not be able to support the project's requirements.	3	5	15	Engage with the Infrastructure project. Advise what supplies and services the Cancer Centre will require. Discuss and agree timelines.	

25	Planning / Design Risk	The facilities do not have flexibility to respond to future service needs.	3	4	12	Capture flexibility as a key principle within the briefing. Assess this at key design review stages.	
26	Planning / Design Risk	The new design fails to meet carbon/green targets	3	4	12	Engage with the Infrastructure project. Identify carbon/green targets at an early stage.	
27	Planning / Design Risk	The new Cancer Centre fails to link with other services due to location i.e. critical care.	3	3	9	Review of location of services within Cancer Centre and proximity to other services located elsewhere on site.	
28	Construction / Property Risk	Site condition risks.	3	4	12	Collate existing site information. Commission a feasibility study. Commission surveys and investigations as required to mitigate risk.	
29	Construction / Property Risk	Risk associated with working in a live environment.	4	4	16	Undertake feasibility study to understand services, isolations and demolitions in order to clear the site. Develop construction phase planning via dedicated workshops in due course.	
30	Construction / Property Risk	Estates request an onerous level of asset management	3	3	9	Ensure that the level of asset recorded is suitable for a project of this size and complexity.	
31	Finance Risks	The project estimate is poorly prepared and inaccurate	3	4	12	Develop robust SoA - use Lead Advisor / Cost Advisor to prepare initial cost plan using current benchmarking and inflation allowances. Allow for appropriate optimism bias at this early stage in the process.	
32	Finance Risks	The project becomes unaffordable: - Capital funding not approved by SG - Revenue funding not approved by NHS Lothian	4	5	20	Initial Agreement clearly articulating the value of a world class cancer facility in Edinburgh. Transformed ways of working to show best use of public monies. Transformed services based on most efficient use of workforce to demonstrate value for money.	
33	Finance Risks	Inflation costs rise above those projected	4	4	16	Optimism bias at IA and risk register at OBC should help to mitigate this risk.	
34	Finance Risks	Changes in legislation or tax rules increase project costs	4	4	16	Optimism bias at IA and risk register at OBC should help to mitigate this risk.	
35	Finance Risks	Equipment budget is insufficient	4	3	12	Liaise with HFS to agree a realistic equipment budget for the project. Departmental reviews.	
36	Finance Risks	Uncontrolled changes may lead to affordability issues.	3	4	12	Ensure that the project is structured properly with good governance and project management. Communication from stakeholders - robust consultation and IA.	
37	Finance Risks	Revenue costs may be understated.	3	4	12	Engage early with NHSL finance. Ensure that they are involved in developing the financial case for IA. Understanding the design and it's impact on revenue (single rooms vs multi bed - issues).	
38	External Risks	Changes to policy affects project cost or progress	3	3	9	Managed with risk allowances. Governance to confirm changes to be implemented as a result of external factors.	
39	External Risks	There are uncertainties over future policy changes	3	3	9	Managed with risk allowances. Governance to confirm changes to be implemented as a result of external factors.	
40	External Risks	The project does not align with Scottish Government cancer strategy.	3	3	9	Refresh of Beating Cancer Ambition and Action 2016 has been released (March 2020) and the Proposed Clinical Model specifically addresses key aspects of this strategy, alongside key aspects of several other local and national strategies.	
41	External Risks	Brexit/IndyRef2/Political Risks	4	4	16		It was noted that we are currently experiencing unprecedented political uncertainty and that this could impact the project in a number of different ways.

Appendix 8: Pharmacy Strategy for WGH and ECC

Re-provision of the Edinburgh Cancer Centre (ECC) provides an opportunity to design one purpose built, central pharmacy that would support the delivery of cancer services alongside all of the specialties on the Western General Hospital (WGH) site.

Existing Arrangements

Pharmacy services are currently provided from two separate areas on the WGH site;

1/ The pharmacy in the Alexander Donald Building (ADB) provides a dispensing service for discharge medicines for all inpatients at WGH including ECC, and outpatients for all areas except for cancer services; a distribution service providing ward medicines stock for all areas; aseptic dispensing service proving parenteral nutrition; IV additives including hazardous agents; and cytotoxic agents, some of which are SACT to support the high workload in ward 1.The ADB Aseptic Unit also support Clinical Trials activity by manufacturing required products. On Saturday and Sunday, manufacture of all aseptically prepared products are done at the ADB Aseptic Unit.

2/ The pharmacy in ECC (situated in Ward 1) dispenses all systemic anti-cancer therapy (SACT) (oral and parenteral including clinical trials medicines) for in-patients, day-case and out-patients and selected oral supportive therapies to day-case and out-patient cancer patients from Monday to Friday.

This split site working does not maximise efficient utilisation of staff or premises. The split location is also confusing to patients who may arrive at the wrong dispensary or have to visit both dispensaries in order to obtain all their medicines.

Drivers for change

- Combination of two aseptic units into one unit with adequate space and equipment to account for the existing and projected future increase in demand – this recommendation is included in the future modelling of the NHS Scotland review of the configuration of aseptic units as part of the National Pharmacy Aseptic Dispensing Programme.
- Currently there is one aseptic unit in Edinburgh Cancer Centre (ECC) and one in Alexander Donald Building (ADB), which have a lifecycle requirement for replacement approximately every 15 years. By the time a new Cancer Centre is delivered, the ADB aseptic unit will be >12 years old and would require replacement at a cost in excess of £2M.
- Allow the provision of the required space to develop an aseptic unit containing the specified Biosafety Hazard 2 rooms needed to provide ATMP products that will become a priority for Clinical Trials delivery and potentially future licensed treatments in the next 10 years and facilitate the introduction of new medicines technologies.
- Integration of workforce that currently function as two separate departments and, due to severe space constraints both in the ADB pharmacy and Ward 1, are working from multiple satellite office spaces across the WGH campus. Integration would result in more efficient, shared working and increase resilience of pharmacy workforce capacity, reducing duplication of work
- Opportunity for a more holistic management of cancer patients with multi-morbidity from co-location of Pharmacists working in different specialities and Cancer services (i.e. currently all non-cancerWGH pharmacists are located in a separate department to the cancer team)
- Efficiency of shared working elimination of duplicate roles and some activities (e.g. administrative support in dispensary, decrease in the number of printers and office equipment).
- The requirement to maintain competencies of two separate teams is very challenging, especially with pharmacy technicians trained to manufacture aseptically prepared products.Economy of scale for purchasing medicines would allow for 1 order instead of 2; and 1

area for controlled drugs further reducing requirements for duplication in effort and team members time to undertake. In addition, an increase in efficiency for receipt of medicines by removing need for orders to be assembled and transported between ADB Pharmacy and ECC pharmacy department.

- Efficiency of eliminating the requirement of portering of medicines between the two pharmacy premises.
- Need for improved storage space for medicines required for the hospital site with resultant decrease in associated current H&S risks.
- Improved cold room storage space would decrease the number of cold rooms required for refrigerated medicines from 3 to 2; and improve efficiency in associated maintenance contracts. There would also be a reduced requirement for free standing fridges.
- Need for improved staff experience with adequate facilities for changing, lockers, staff room and common departmental spaces to support team working. The current pharmacy department does not have any of these available for staff.
- Eliminate confusion for patients looking for pharmacy services

Future Vision

The future vision for Pharmacy on the WGH site would include:

- One licensed Aseptic Unit
- One dispensary providing a service for the whole of the WGH site
- Medicines store (Distribution Service) for supply of medicines to all wards on the WGH site
- Inclusion of robotics to support the delivery of medicines supply in Dispensary and Distribution – this will free up staff capacity to undertake other activities
- Integrated Radiopharmacy (currently located on the RIE site) that makes Radiopharmaceuticals for nine sites (however >50% of products prepared come to WGH)
- Flexible accommodation to accommodate future growth – including service areas and expanding workforce accommodation
- Expansion of service designed to support alternative models of delivery of medicines to patients closer to home (e.g. medicines homecare, community based dispensing of prescriptions, etc)

Essential components of this include:

- A single Licensed Aseptic Unit (combine from two to one); licensing will allow a longer expiry date of products prepared and also bulk manufacture of products not based on individual prescriptions.
    - Include ATMP's and clinical trials service as well as SACT, TPN, IV, other.
    - Biohazard Unit for gene therapy
    - Controlled temperature & refrigerated storage
    - Potential for revenue generation by supplying aseptically prepared medicines to other boards
    - Consider and scope introduction of robotic solution for batch manufacturing of products (e.g. SACT, monoclonal antibodies)

- Dispensary (combine for Inpatient and Daycase /Outpatient)
    - Controlled temperature, freezer & refrigeration storage required.
    - Patient waiting areas and counselling rooms to facilitate private consultations
    - Consider and scope introduction of robotic solutions to aid dispensing

- Radiopharmacy (move from RIE site)
    - SIRT supplied to vascular patients at RIE, time critical (currently only 10 patients annually)

  - Gallium Imaging (NSS service) used in PET scanning for cancer
  - Cyclotron located with PET Scanner in UOE building at RIE – 70% usage for NHS patients, lifespan of 10-15 years
  - Require a laminar flow cabinet and gallium cabinet
  - Requires close links with imaging and nuclear medicine
  - Radiopharmaceutical developments in pipeline for cancer treatment

- Distribution (store)
  - Access for suppliers deliveries
  - Large storage and distribution area requirement but consideration and scoping of robotic solutions to decrease floor footprint requirements
  - Controlled temperature and refrigeration storage within stores

- Accommodation for all team members, meeting rooms and staff facilities

Service Provision

The future vision is to provide a seven day clinical service using automation as much as possible –for example robots for dispensary and aseptic filling and delivery of medicines via pneumatic tube system/ robots.

Future horizon scanning includes continued growth in medicines developments, use of prefilled SACT where possible, taking into account NCIVAS project developments clinical trials expansion in all clinical areas, introduction of ATMPs and gene therapies and parenteral nutrition changes. The introduction of a more integrated regional service to the provision of therapies will result in changes to the pharmacy requirements.

Changes in dispensing models are likely to include medicines provision as close to home as possible with community dispensing of HBPs for different specialist areas , and home delivery of medicines once patient has been discharged, to take advantage of community hub and spoke model of medicines provision (this would have an impact on community pharmacy capacity as well as clinical pharmacy input to ensure accurate communication that would need to be considered/resourced).

In addition the roll out of medicines homecare will also change the way in which medicines are dispensed. Changes in supply models require investment in resource to ensure an adequate amount of expert advice and administrative support is available to facilitate this. This is likely to lead to a need for expansion in the pharmacy workforce.

The use of more automation in pharmacy and optimising the use of electronic prescribing with its reporting capabilities will change how wards and areas, order and store medicines. This will include the use of automated systems (such as the Omincell Supply Management System)which allows automated inventory management system and integration into automated medication dispensing system.

Challenges

- Current workforce challenges plus an increase in high risk patients requiring clinical pharmacy intervention highlights the importance of automation as wel as diversification of roles where possible to maximise effective use of time for all team members.
- Education and training of workforce to be able to maintain delivery of high quality pharmacy service, with increasing front-facing roles for pharmacy workforce.
- Required space for storage of medicines is likely to increase due to a need to hold increased stock levels to mitigate against medicines shortages, unless effective use of automation is in place.

- Plans for changes to services delivered on the WGH campus in the future and the increased demand for treatments in all clinical areas, including cancer services, is projected to continue.
- There is a need to ensure that the new integrated pharmacy department is able to meet the needs of the whole site in the future.

Appendix 9: Design Principles

Co-Design Team One

Group members (names redacted for GDPR purposes)

MacMillan Information & Support Manager
Carer
Patient
NHS Lothian Clinical Service Manager for Cancer Services (Facilitator)
SCAN Patient Involvement
Cancer Services, Project Support Officer
NHS Lothian Public Involvement and Engagement Manager

Holistic wellbeing for everyone

1. **Design of the building should be welcoming and friendly**
   - 1.1. From the outside, as well as inside, dimensions should be "human" in scale
   - 1.2. Airy, warm, and bright with natural daylight
   - 1.3. Outside green space availability with easy access and easily visible from the inside
   - 1.4. Building design should not be intimidating or imposing

2. **A clear main entrance including a welcome hub with orientation aids**
   - 2.1. Clear wayfinding help
   - 2.2. Easy to understand signage
   - 2.3. Designed to recognise that people arriving may be in a stressed state
   - 2.4. Consider zoning for ease of wayfinding

3. **The building should be designed to respect patients and staff privacy**
   - 3.1. Consideration given to pathways through the hospital and as far as possible avoid the movement of patients (i.e., in beds/trolleys) through busy public areas
   - 3.2. Waiting areas not in corridors
   - 3.3. Mixture of waiting areas to allow privacy for patients who require it
   - 3.4. Include non-clinical rooms for counselling, quiet space, discussion near to clinical areas and easy to access

4. **Protect privacy and dignity of patients and staff when bad news is related to patients**
   - 4.1. Appropriate areas within clinical spaces for bad news
   - 4.2. Break out areas for staff (away from patients and visitors)
   - 4.3. Consideration of patient location and pathway after receipt of bad news
   - 4.4. Bereavement suite

5. **The building should be designed to respect patients and staff dignity**
   - 5.1. Accessible and convenient spiritual place for use by staff, patients and visitors
   - 5.2. Signage, wayfinding, and information in variety of languages
   - 5.3. Appropriate number of toilets for patients and staff, convenient, within easy access and clearly signposted
   - 5.4. Specific consideration should be given to supporting end of life care

5.5. Appropriate number of changing facilities and showers for staff
5.6. Designated wheelchair areas at entrances to building, with properly maintained wheelchairs

6. **The design should include high quality facilities for staff and patients with children**
   6.1. On site nursery
   6.2. Play areas for children
   6.3. Breast feeding area
   6.4. Changing facilities for babies
   6.5. Gender neutral

7. **Supportive services should be centralised, accessible, welcoming and encourage usage**
   7.1. 3rd sector partners visible and accessible to encourage use
   7.2. Carers' hub providing specific support to carers
   7.3. Hub for inpatients/outpatients providing clear and accessible information upon arrival and during visits/stays

8. **The design needs to include hotel quality accommodation for patients from rural areas and those travelling long distances for their treatment**
   8.1. Separate, quality accommodation with opportunities for social interaction among those using this form of accommodation
   8.2. Self-catering facilities

9. **Facilities for staff should be enhanced and fit for purpose**
   9.1. Meeting/training rooms
   9.2. Changing facilities and showers close to places of work
   9.3. Toilets
   9.4. Break out rooms
   9.5. Lunch and break facilities and private space

Co-Design Team Two

Group members (names redacted for GDPR purposes)
Cancer Services Clinical Nurse Manager
Oncology Ward Senior Charge Nurse
Patient
Cancer Services Programme Manager (Facilitator)
Strategic Programme Manager, Cancer Services
Service Change Advisor for Scottish Health Council
FACE representative

Access, environment and technology

10. **A range of options for improving transport links should be included**
    - 10.1. Shuttle bus from local transport hubs
    - 10.2. Drop off/pick up zones with wheelchair access
    - 10.3. Multiple bus stops through the site
    - 10.4. Clear zones to improve patient journey should be implemented (e.g. red zone for outpatients, yellow zone for oncology day unit)
    - 10.5. User friendly electronic updates of transport
    - 10.6. Safe path for walking around the site for staff and patients to enjoy

11. **The design of the building and surroundings should be accessible and user friendly**
    - 11.1. Appropriate access to accommodate all abilities
    - 11.2. Up to date with dementia standards
    - 11.3. Clear signage
    - 11.4. Be mindful that not all disability is visible

12. **The design of the entrance should provide personalised and friendly information and wayfinding**
    - 12.1. Member of staff to greet people if possible
    - 12.2. Volunteers to assist with wayfinding

13. **The design should make use of latest technology and supporting infrastructure to support the patient experience**
    - 13.1. Up to date, future-proofed IT
    - 13.2. Safe and protocolised IT systems
    - 13.3. Increased digital profile of the information for patients and visitors
    - 13.4. Supporting online consultations
    - 13.5. Social media friendly and positive online presence

14. **The design of the space should be mindful about natural light and maximise access to it**

15. **Patient rooms should be spacious, single occupancy and family friendly**
    - 15.1. Space for family/carers should be incorporated

16. **The design should demonstrate consistent branding with possibility of variety of colours to differentiate specialities**

17. **The building should include some flexible space to allow room for growth of the services**

18. **The design should include a variety of car parking and parking should be adequate.**
    18.1. Off-site but safe and easily accessible (shuttle bus)
    18.2. On site, close distance to entrance
    18.3. Clear instructions on parking should be issued with joining instructions to avoid stressing patients
    18.4. A range of options should be available for staff to retain current staff and encourage staff to work at WGH

19. **The design of the building should include adequate and safe storage for each area including for patient's belonging**

20. **The design of the building should incorporate:**
    20.1. Buzzer access to wards within strict but clearly advertised visiting hours
    20.2. Fire safety
    20.3. ID cards access for staff
    20.4. Confidentiality
    20.5. CCTV
    20.6. Catering should meet the needs of patients and staff
    20.7. Supportive, holistic services connected to main treatment areas
    20.8. Social spaces both together and option for staff to have separate space

Appendix 10: Integrated Impact Assessment Action Plan

Integrated Impact Assessment: Summary Report Template

Each of the numbered sections below must be completed

Interim report	✓	Final report		(Tick as appropriate)

1. Title of plan, policy or strategy being assessed

Re-Provision of the Edinburgh Cancer Centre

2. What will change as a result of this proposal?

Re-provision of the Edinburgh Cancer Centre is an opportunity to transform the way cancer services are delivered and to construct a purpose built facility for cancer patients based upon transformed patient pathways.

3. Briefly describe public involvement in this proposal to date and planned

There have been a wide range of Stakeholder Engagement activities to date which are due to continue in order to shape and inform the development of the Initial Agreement (IA). More detail on these can be found in s3.2 of the IA

4. Date of Integrated Impact Assessment (IIA)

28th November 2019

5. Who was present at the IIA? Identify facilitator, Lead Officer, report writer and any partnership representative present and main stakeholder (e.g. NHS, Council)

Name	Job Title	Date of IIA training
names redacted for GDPR purposes	Lead on Equalities and Human Rights, NHS Lothian	November 2017
	Strategic Programme Manager, Cancer Services, NHS Lothian	November 2018
	Patient Involvement Manager, SCAN, NHS Lothian	
	Patient Engagement and Involvement Manager, NHS Lothian	2018
	Clinical Service Manager, Cancer Services, NHS Lothian	

	Assistant Finance Manager, Capital Finance, NHS Lothian Macmillan Programme Manager, NHS D&G Patient Associate Medical Director, Cancer Services, NHS Lothian Carer Service Change Advisor, Scottish Health Council Head of Oncology Physics, NHS Lothian Patient Directorate Assistant, Cancer Services, NHS Lothian Assistant Service Manager, NHS Borders Project Support Officer, NHS Lothian Project Development Worker for Equality and Rights Network GP Lead, NHS Lothian Capital Finance Manager, NHS Lothian Partnership Lead, Western General Hospital	

6. Evidence available at the time of the IIA

Evidence	Available?	Comments: what does the evidence tell you?
Data on populations in need	Yes	NHS Lothian is part of the South-East Scotland Cancer Network (SCAN) and works collaboratively with NHS Borders, NHS Fife, and NHS Dumfries and Galloway to plan and deliver cancer services across the South East of Scotland. The centre provides a regional service which serves a population of almost 1.5 million in South East Scotland.

Evidence	Available?	Comments: what does the evidence tell you?
		All highly specialist cancer care is provided to SCAN Region patients in NHS Lothian. Where possible, assessment and diagnosis is undertaken locally in the NHS Board of the patients residence however some regional patients will be referred to NHS Lothian for clinical assessment and diagnosis of suspected cancer. Some treatment services (such as radiotherapy and complex chemotherapy provision) are exclusively provided by NHS Lothian. The proposal relates to service users in the South East region that use the service. Demand for Cancer services is rising annually in response to a number of key drivers: - Aging demographic - Increasing population within Lothian and the SCAN region which is expected to continue - Increased cancer incidence across the SCAN region - Improved diagnostics - Increased screening/early cancer detection - Increased number of effective treatment options licensed and Scottish Medical Council (SMC) approved. - Increased use of multiple lines of Systemic Anti-Cancer Therapy (SACT) Many more people are living with and beyond cancer resulting in a need to focus on early prevention and detection to meet the challenge of cancer as well as adding a complexity to care planning and delivery for those who are living with the consequences of cancer or cancer treatment.
Data on service uptake/access	Some	NHS Lothian carried out an engagement process in preparing an Equality Outcomes document for 2018-2021; those consulted told us that there are four important Outcomes to focus on. These are • Better Access

Evidence	Available?	Comments: what does the evidence tell you?
		• More Compassion • More Participation • Justice **Access** The Scottish Government Cancer Strategy Beating Cancer; Ambition and Action (March 016) states that health inequalities in cancer outcomes will be improved by taking action to help more equitable access to screening, earlier diagnosis, support for health literacy and access to services to support people who are living with cancer that are aimed directly at hard-to reach groups. Health inequalities across Scotland mean that cancer incidence is more common in the most deprived areas of Scotland - incidence rates have typically been 30% to 50% higher in the most deprived compared to the least deprived areas. There are a number of reasons for this including lifestyle choices and variations in screening uptake which ultimately have an impact on cancer survival for some types of cancer. Health inequalities can also be found in cancer mortality rates. Of people in the 45 to 74 year age group, those living in most deprived areas are more than twice as likely to die of cancer than those in the least deprived areas. The gap between least and most deprived areas is projected to continue to widen. Action needs to be taken to reverse this by firstly understanding what this means within the context of the South East Region and planning proactively as to how we can address this.
Data on equality outcomes	Some	In the Scottish Government Cancer Strategy Beating Cancer; Ambition and Action (March 2016) it highlights evidence that shows people from deprived communities are more likely to have poorer health outcomes and they also use acute services more than the population as a whole. The Health Promoting Health Service ethos provides an opportunity to

Evidence	Available?	Comments: what does the evidence tell you?
		address inequalities and the Scottish Government are supporting NHS Boards to ensure that routine enquiry for vulnerability is built into person-centered care and, therefore, those at risk of poverty and inequality attain the best possible health outcomes. We must continue to develop this ethos as the proposal develops. **Transforming Care After Treatment (TCAT),** a five year programme funded by Macmillan Cancer Support Scotland, is a partnership between the Scottish Government, Macmillan Cancer Support, NHS Scotland, local authorities and third sector organisations that focuses on the care and support of people after treatment for cancer. A TCAT pilot in Lothian for patients with breast, gynecological, anal, rectal and lung cancer highlighted the benefit of offering care after cancer treatment based around an assessment of individual needs. By identifying issues that were important to a person's health and wellbeing, and jointly working with them to manage their recovery through shared planning, patients reported a return of confidence and sense of control. Additionally, having a single point of staff contact was hugely beneficial to many participants, which helped them feel 'less alone'. This programme is an example of the benefits gained by focusing on outcomes based on individual needs.
Research/literature evidence	In progress	Evidence of effectiveness - the need to consider how effective our services are for the different population groups we serve. The concepts of compassion (we will always seek the best for the people we work with - both our patients and their families and communities, and our own staff), participation (the right to have a say in decisions that affect us - "nothing about me without me") and justice (the duty of NHS Lothian to understand the impact of its policies, procedures and services on

Evidence	Available?	Comments: what does the evidence tell you?
		different groups within the population) will underpin this evidence. A summary sentence for each of the main patient groups - will be added to this table in due course.
Public/patient/client experience information	Yes	There has been a version of Experience Based Co-Design undertaken with a variety of patients as part of the IA Development process. This includes a patient video which can be seen here: https://vimeo.com/318729227 Using the following password: CodesignECC And a range of other activities including compiling a Design Statement, an Options Assessment event and discussion of the proposed Clinical Model. Further information on this process is available upon request.
Evidence of inclusive engagement of service users and involvement findings	In progress	We are keen to involve as wide representation from service users as possible as the project develops. As described above, a series of workshops have occurred as part of the development of the Initial Agreement however we also plan to launch a wider communications strategy as the programme progresses to gather as many opinions as possible.
Evidence of unmet need	Yes	Currently, there are delays at different points on the pathway for cancer patients. NHS Lothian's performance is below the 95% compliance rate for the 31(days from decision to treat to treatment) and 62 (days from referral to treatment) day national standards. Continuous growth in demand for Inpatient, Outpatient, Systemic Anti Cancer Treatment (SACT) and Radiotherapy has also led to overcrowding in current facilities. This has been acknowledged by an investment of £18 million by the Scottish Government for Oncology Enabling works however this will only sustain service demand for the next five

Evidence	Available?	Comments: what does the evidence tell you?
		years and a new solution is required post 2025.
Good practice guidelines	In progress	A review of current clinical guidelines is required, in particular to look at whether they refer to equalities and equity of outcomes, whether they should and how we ensure equity of care.
Environmental data	No	Energy costs - to be added when the design process is further advanced.
Risk from cumulative impacts	Yes	Growing demand exceeds what the service can cope with within existing building infrastructure - without any action this will lead to delayed treatment. Further deterioration of the building could potentially cause service disruption or expenditure on backlog maintenance. The Oncology Enabling programme of work will allow for immediate issues to be addresses however as the demand for cancer services continues to increase a long term solution is essential.
Other (please specify)		
Additional evidence required		

7. In summary, what impacts were identified and which groups will they affect?

Equality, Health and Wellbeing and Human Rights	Affected populations
Positive	
Care closer to home – decreased travel time and distance required to travel	All but particularly elderly, disabled people
New build:	
• Fit for purpose facilities which are compliant with all applicable standards	Disabled people
• Improved technology allowing multi-language Information, way finding and decreasing social anxiety	Ethnic minority and disable people
• Improved signage to reduce anxiety	All
• Improved access with easy way finding. Well described patient, visitor and staff pathways	All
• Inclusive, accessible toilet facilities for staff and patients	All, including Trans and non-binary people
• Improved staff training and education facilities	Staff
• Childcare and breastfeeding facilities	Staff and carers, young people and children
Negative	

Access to wellbeing and holistic services post treatment may not be equal to everyone due to social and economic status. Need to ensure that Care Closer to Home does not negatively impact patients by not allowing them the right to choose the location of their treatment.	Homeless people, those involved in the criminal justice system People from rural/semi rural communities

Environment and Sustainability	**Affected populations**
Positive Care closer to home: • reduced travel/reduced carbon footprint	People from rural and semi rural communities
New build: • Comprehensive recycling • Built in sustainable measures • Robust disposal procedures • Enhanced public safety due to new build options providing reduction in infection risks • Nursery on site for staff would decrease travel	All Staff
Incorporating green spaces into original design: • Enhanced biodiversity by supporting wildlife	Patients, carers, visitors and staff
Negative Some design elements (e.g. single rooms) could potentially be resource inefficient	All

Economic	**Affected populations**
Positive Care closer to home: • Decrease in travel time and costs	Staff, people with protected characteristics and rural communities
New build providing nursery and child care facilities on site decreasing childcare costs and travel	Staff, children and young people, carers
Transforming cancer care service by focusing on prehabilitation of patients awaiting their treatment to reduce hospital length of stay	Self-employed, single parents, carers,
Centralised Social Care - access to charities	Older and disabled people, veterans, single parents, carers, vulnerable families

Negative Providing services closer to home could have a negative impact on service sustainability in some areas due to staff working in other locations.	Staff

8. **Is any part of this policy/ service to be carried out wholly or partly by contractors and how will equality, human rights including children's rights, environmental and sustainability issues be addressed?**

   Any contractors selected by NHS Lothian will be required to demonstrate compliance with all applicable standards, taking account of equality, human rights including children's rights, environmental and sustainability issues.

   NHS Lothian will work alongside the contractors to ensure any negative impact on the local community during the construction time is minimised, including:
   - Increase in noise, traffic, pollution
   - Decreased car parking on the hospital site.

9. **Consider how you will communicate information about this policy/ service change to children and young people and those affected by sensory impairment, speech impairment, low level literacy or numeracy, learning difficulties or English as a second language? Please provide a summary of the communications plan.**

   A communications plan will be developed as the proposal progresses, taking into account children and young people and those affected by sensory impairment, speech impairment, low level literacy or numeracy, learning difficulties or English as a second language.

10. **Does the policy concern agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism, town and country planning or land use?** If yes, a Strategic Environmental Assessment (SEA) should be completed as part of the design phase of the project, and the impacts identified in the IIA should be included in this.

    SEA to be completed

11. **Additional Information and Evidence Required**

    If further evidence is required, please note how it will be gathered. If appropriate, mark this report as interim and submit updated final report once further evidence has been gathered.

    No further evidence required at this stage.

12. **Recommendations (these should be drawn from 6 – 11 above)**

Gender equality – Plan required for how best to support patients going through gender transition and how to approach treatment during transition

Further discussions recommended with the LGBTQ community about what an inclusive environment consists of for them.

Consistent / equal help should be offered to all patients regardless of their cancer type. Require resources to establish a patient profile and revise the Hospital Passport model (currently used for children within cancer services) so it can be used by adults to access and manage their health record.

Proposal must take into consideration patient choice and maximise self-care and independence. (Realistic Medicine)

Resource efficiency should be maximised (recycling, etc) by improvement of culture and education.

13. Specific to this IIA only, what actions have been, or will be, undertaken and by when? Please complete:

Specific actions (as a result of the IIA which may include financial implications, mitigating actions and risks of cumulative impacts)	**Who will take them forward (name and contact details)**	**Deadline for progressing**	**Review date**
Gender Equality Plan required	Project Team with specialist input when required	During development of OBC	TBC
Further discussions with LGBTQ community	Project Team with specialist input when required	During development of OBC	TBC
Resources to be designed based on patient profile	Project Team with specialist input when required	During development of OBC	TBC
Use of Hospital Passport to be investigated	Project Team with specialist input when required	During development of OBC	TBC
Maximisation of resource efficiency	Project Team with specialist input when required	During development of OBC	TBC

14. How will you monitor how this policy, plan or strategy affects different groups, including people with protected characteristics?

Stakeholder Engagement will continue as the proposal develops to ensure that all impacts on people with protected characteristics are considered.

15. Sign off by Head of Service/ Project Lead

Name

Date

16. Publication

Send completed IIA for publication on the relevant website for your organisation. See Section 5 for contacts

Appendix 11: NHS Lothian Cancer Service Model Review Summary Report

Executive Summary

1. A strategic review of the proposed clinical model for Cancer services within NHS Lothian has been undertaken through engagement with key members of the multi-disciplinary team and colleagues representing all regional boards served by the Edinburgh Cancer Centre (ECC), clinical trials and research.
2. The work has involved extensive capacity planning and analysis informed by stakeholder dialogue using a workshop-based approach to evaluate alternative service delivery models and to identify the optimum service delivery model.
3. To support the re-submission of the Initial Agreement for reprovision of the ECC a clear focus on identifying the regional elements of the proposed model of care has been undertaken.
4. A summary of the evaluation of the alternative service options is summarised below:

Table 1: Service Model Evaluation

	Do Nothing	Optimum Delivery Model	Decentralised radiotherapy model
Description	• Impact of demographic change and tumour site growth only. • No change to the service delivery model	• Cancer assessment unit; maximising direct discharge and community-based pathways. • Increase provision within non-acute and community settings. • Maximise care delivered at regional boards. • Reduced length of stay; increased day case rates. • Application of the latest radiotherapy technologies within the fleet of linear accelerators. • Increased number of clinical trials across all care settings.	• Delivery of radiotherapy within an additional location within East of Scotland region. Assumed to be located at an acute hospital site within the East of Scotland.
Assessment against Investment objectives	✗ Does not meet 2 of 5 ? Partially meets 3 of 5	✓ meets all 5	✓ Fully meets 3 of 5 ? Partially meets 2 of 5
Assessment against Critical Success Factors	✓ Meets 1 of 5 ? Partially meets 1 of 5 ✗ Does not meet 3 of 5	✓ meets all 5	✓ Fully meets 3 of 5 ? Partially meets 1 of 5 ✗ Does not meet 1 of 5
Overall Evaluation	✗	✓ **Preferred way forward**	? **Possible service option**

5. The service model has included the current (2022) level of CAR T-cell service delivered in NHS Greater Glasgow and Clyde for NHS Lothian which is anticipated to flow to Edinburgh Cancer Centre in the future. Further analysis will be undertaken as part of the Outline Business Case.

6. Within the proposed service model there are a number of regional implications which are summarised in the table below; this also includes the implications for West Lothian patients at St John's Hospital:

Table 2: Regional Implications

	Change	Impact
NHS Fife	• Early discharge to Fife cancer beds; both planned and unplanned pathways. • Repatriate activity from Breast Surgery (assumed 80%) generated through screening.	• There is ongoing to agree an appropriate point of transfer to the home board / non-specialist centre. • Theatre sessions; 27 theatre sessions per annum; <1 session per week • Inpatient beds – circa 140 patients per annum, 0.7 beds.
NHS Borders	• Proposed closure of BGH aseptic pharmacy • Increased specialist visiting outpatient service to include Prostate. • Repatriate activity from Breast Surgery (assumed 80%) generated through screening.	• NHS Lothian have assessed the impact for aseptic services and identified the new operational model should the aseptic suite at BGH close. <124 SACT delivery episodes shift to ECC • Outpatients: 1 session per week • 0.1 bed; 8 sessions per annum (small volume within baseline year of 29 patients)
NHS Dumfries & Galloway	• Impact if the Oncology flow moves from ECC to West of Scotland.	• No change within D&G • Impact on ECC: -9 inpatient beds;- 1 day space; -0.5 outpatient room; -0.7 Linac
NHS Forth Valley	• Repatriate activity from Breast Surgery (assumed 80%) generated through screening.	• Theatre sessions; 13 theatre sessions per annum; <1 session per week • Inpatient beds – 66 patients per annum, 0.3 beds
St Johns	• Increased visiting outpatient service to include Gynaecology and Head & Neck. • West Lothian SACT for 80% WL patients; • West Lothian Breast Surgery for 80% patients. • West Lothian assessment and care for 80% inpatients	Space required at SJH: • 5 outpatient rooms available 10 sessions/per week • SACT chairs in line with current 2022 provision • 2 theatre sessions • 6 inpatient beds
Midlothian	• Shift of supportive therapies	• 5 chairs; 10 sessions per week
East Lothian	• Shift of supportive therapies	• 5 chairs; 10 sessions per week
All	• Increased virtual appointments, mainstreaming / making sustainable arrangements introduced for Covid.	• Reduce patient travel • Impact on outpatient space to be confirmed
	• Assessment and care in, and discharge to, beds closer to home; both planned and unplanned pathways.	• There is ongoing discussion with the regional boards and the health and social care partnerships within NHS Lothian to agree an appropriate point of transfer to the home board / non-specialist centre.
	• Potential for regional satellite radiotherapy unit at an acute hospital site within the East of Scotland.	• Space and capacity to establish satellite radiotherapy including all supporting infrastructure

7. An optimum delivery model has been identified; the impact of which to regional and NHS Lothian requirements has been quantified where possible. There are a range of service improvements and benefits within the model including greater elements of care closer to home, reduced patient travel and increased access to clinical trials.

8. There is further work to be addressed as part of the Outline Business Case to further consider the potential for a decentralised radiotherapy service. The initial evaluation suggests the critical success factor in relation to value and sustainability would not be met.

1 Introduction

1.1 Aims & Objectives

1.1.1 Buchan + Associates was commissioned by NHS Lothian to undertake a review of the cancer services clinical model with the following aims:

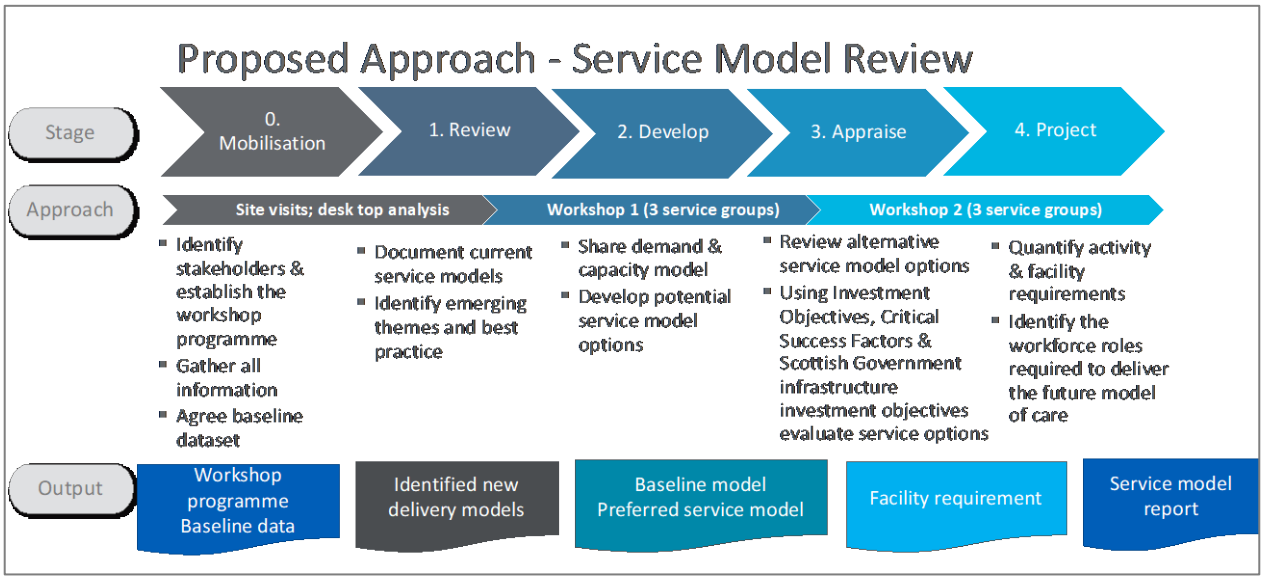
- to review current and proposed models including performance assumptions across planned patient care, acute oncology and radiotherapy;
- to review best practice examples from elsewhere across all areas of service delivery to identify any potential changes to the model of care;
- adopting a regional approach, identify and evaluate any alternative regional configuration options; and
- determine the clinical facility requirements resulting from the proposed service delivery and regional configuration option.

1.1.2 Significant work has been undertaken in developing the Initial Agreement (IA) submitted in 2019. The outputs from this work will augment and support the resubmission of the IA in 2022.

1.2 Approach

1.2.1 An initial 12-week programme of work was scheduled to engage with a wide range of stakeholders across each of the service areas. The approach is summarised below.

Figure 1: Approach



1.2.2 Workshops were scheduled to meet with representatives from each of the following service groupings:

- Planned Cancer Services: planned oncology inpatients and day case (SACT delivery and supportive therapies) and outpatients (Oncology and Haematology);

- Unplanned Care: unplanned admissions including assessment and treatment and Palliative and End of Life Care (P&EOLC);
- Radiotherapy: planning and delivery of radiotherapy and brachytherapy;
- Breast Surgery: outpatients, day case and inpatient surgery; and
- Haematology: planned and unplanned inpatient and day case including SACT and supportive therapies. Acute assessment is undertaken within a shared Cancer Assessment Unit.

1.2.3 Throughout the workshops clinical teams have had the opportunity to present and evaluate different service delivery models.

1.2.4 Evidence from national and international best practice and the collective experience of the regional team were used to establish the future model of care for each area of service delivery.

1.2.5 Site visits to the Edinburgh Cancer Centre and all three regional sites within NHS Fife, Dumfries & Galloway and Borders have been undertaken to fully understand the current service model and facilities used.

1.2.6 This report provides a summary of the future service delivery model and the alternative options evaluated; a final recommendation is set out in the sections which follow**.**

1.3 Activity Analysis

1.3.1 The activity analysis and projections included within each sub-section are based on a 2019 baseline dataset. A range of data have been used including:

- TRAK Admitted patient care and outpatient data;
- Chemocare dataset;
- Radiotherapy dataset;
- Clinical trials dataset; and
- Theatre dataset;

1.3.2 The “do nothing” option developed includes the following assumptions on how the baseline activity would change.

- Demographic growth by age and gender and Health Board by year to 2032;
- Tumour site specific growth to 2027 based on ISD tumour site specific growth to 2027; and
- Additional tumour site growth based on the British Journal of Cancer to 2032.

1.3.3 Assumptions were applied to all datasets within each area of service delivery.

1.3.4 The assumptions made in developing the optimum delivery model are outlined in each sub-section which follow.

1.4 Report Structure

1.4.1 The remainder of this report is structure as follows:

- Sections 2-6: optimum service delivery model for each area of service.
- Section 7: evaluation and impact of alternative service configuration options.
- Section 8: conclusions, recommendations and next steps.

2 Workstream A: Planned Cancer Care

2.1 Service Scope

2.1.1 Planned care includes the following:

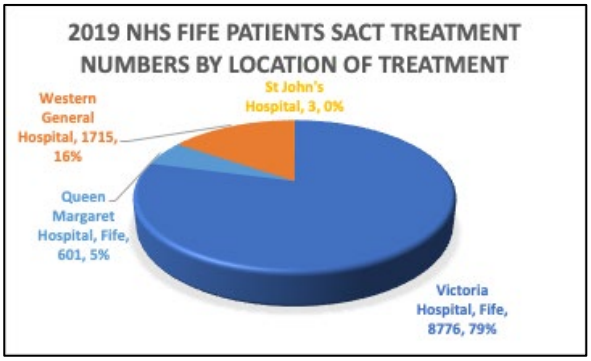
- Planned Oncology day case – SACT and non-SACT;
- Outpatients (Haematology & Oncology); and
- Planned Oncology inpatient care.

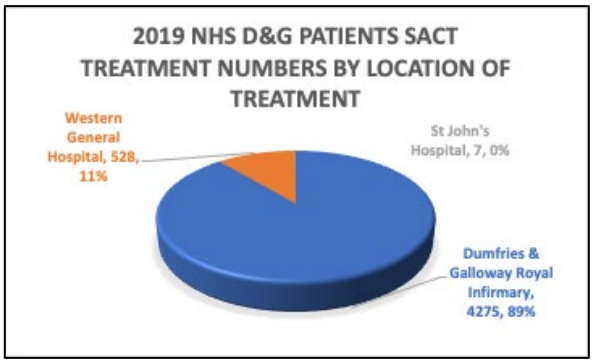
2.1.2 Planned oncology care is delivered on a day case basis at all regional sites, St John's Hospital within NHS Lothian and ECC. Planned inpatient oncology care is only delivered at ECC.

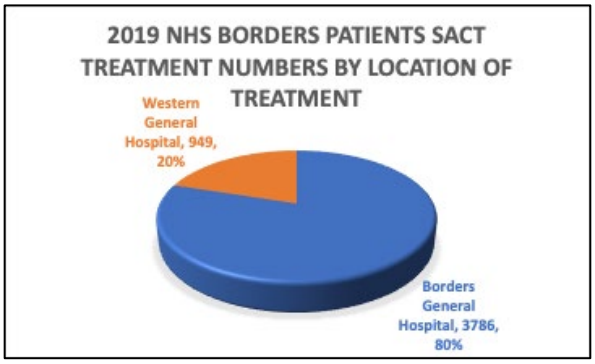
2.1.3 Oncology and Haematology outpatients are delivered at all regional sites and ECC. The specific tumour groups seen vary by board, with smaller volume tumour groups seen at ECC.

2.2 Current Service Delivery - SACT

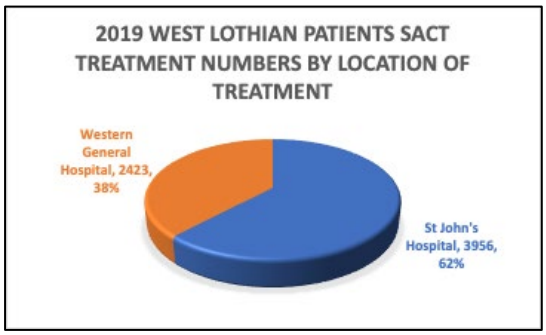
2.2.1 The charts below show the level of SACT delivered within each regional board and at the ECC. Between 80-89% of care is delivered within the regional sites.







2.2.2 An analysis of West Lothian patient SACT treatment between ECC and St John's is also provided; 62% of West Lothian SACT is delivered at St Johns. The St John's Hospital SACT service was expanded in 2019, our baseline data year. Work on the future model of care will review the current and likely future level of provision.



2.3 Current Service Delivery - Outpatient

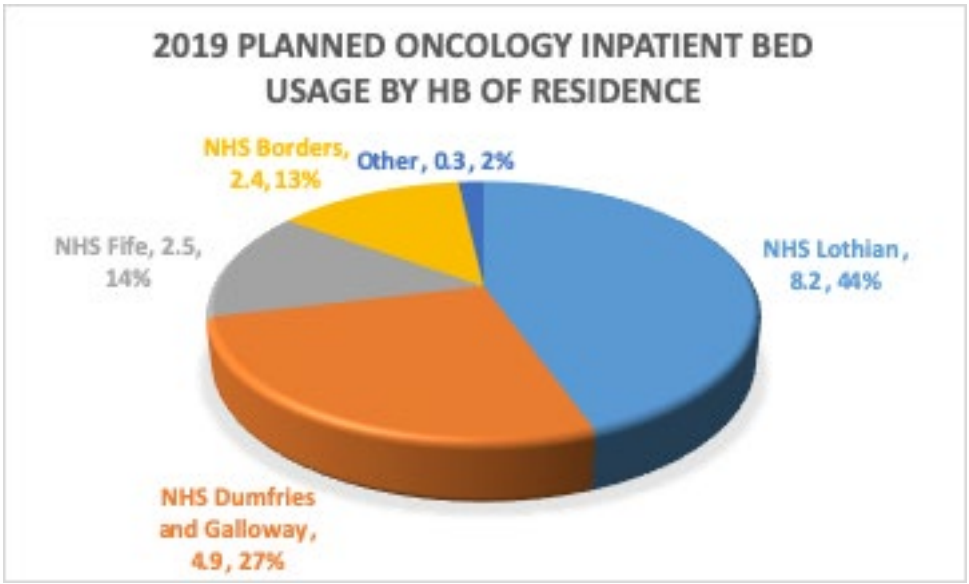
2.3.1 The 2019 level of Oncology and Haematology outpatient activity delivered at regional sites is shown below:

Health Board	Specialty	% New at Home board (remainder in ECC)	% Return at Home board (remainder in ECC)
Borders	Oncology	19%	60%
	Haematology	96%	96%
Fife	Oncology	46%	72%
	Haematology	92%	98%
Dumfries & Galloway	Oncology	38%	81%

2.3.2 As part of the future model an increase in the level of care delivered within regional boards is proposed.

2.4 Current Service Delivery – Planned Inpatients

2.4.1 The current split of Oncology planned inpatient care treated within ECC by board of residence is shown below:



2.4.2 Over 50% of planned bed use for Oncology relates to regional residents. Further analysis on the reason for inpatient stay has been undertaken and the proposed changes highlighted within the future model of care.

2.5 Future Model

2.5.1 Throughout workshops held with key representatives from planned services across all areas, a range of assumptions were developed to inform the optimum service delivery model. These are set out in the table below.

Figure 2-1: Planned Care – Optimum Delivery Model Assumptions

Theme	Assumption	Source / Evidence base
Decentralised model	80% of West Lothian day case SACT is delivered at St John's hospital. There is an opportunity for some Midlothian patients to be treated at St John's. No change to regional day case SACT flows. Outpatients see an increase in tumour groups seen at regional sites: • St John's: Breast, Lung, Colorectal and Prostate delivered currently plus head and neck and gynaecology • Borders: Breast and Lung currently plus Prostate • D&G: Breast, Lung and Colorectal • Fife: Breast, Lung, Colorectal, Prostate GI, Gynae, Urology NHS Fife support the repatriation of elements of planned Oncology inpatients; further work is required to quantify the impact.	Note partial impact of an increased St John's service is identified within the 2019 baseline dataset. There is scope to shift a proportion of oncology to Fife specifically to inpatient haematology.
Outpatient baseline adjustments	A number of clinics are not currently recorded on TRAK. This relates to additional clinical trials clinics and AHP[1] and AMHP[2] supported clinics.	• Clinical trials estimated use of 2 rooms • AHP services currently utilize 2 rooms; assumed pro-rata increase in line with other changes.
Increased access to clinical trials	Proportion of SACT delivery associated with clinical trials calculated as 16% of staffed chair hours. Assumed increase to 30%. The impact to outpatients was modelled using a weighting factor to take into account the increased number of attendances for trial patients.	Commitment to increase access to clinical trials across all areas.
Increased AHP input to clinics	To support multi-disciplinary clinics; assumed increased level of AHP / AMHP support to outpatient clinics.	Current use 2 rooms; assumed increase to 3.
Shift in care setting by treatment type e.g. supportive therapies; immunotherapies; Oral SACT; IV; Subcutaneous	Inpatient to day case, for example, Flot R753 chemotherapy since 2019 = 0.86 beds; Potential opportunity for some shift from day case to outpatient and outpatient to home – unquantified to date. 15% return outpatient appointments to virtual Oncology. % shift of supportive therapies to Midlothian & East Lothian for respective populations	Shift in particular treatment regimens Increase in oral SACT at home from 2019 Shift to virtual consultations post 2020 Increased provision of supportive therapy outwith an acute hospital setting

[1] AHP in this document refers to the Allied Health Professions of dietetics, occupational therapy, physiotherapy, and speech and language therapy.
[2] AMHP refers to Allied Mental Health Professionals such as clinical psychologists

Change to length of stay	Based on the length of stay distribution there is a potential opportunity to model a trim point for Oncology. There is ongoing discussion with the regional boards and the health and social care partnerships within NHS Lothian to agree an appropriate point of transfer to home board / non-specialist centre. It is recommended a Day of Care audit is undertaken to identify if any alternative care setting can be planned in the future for any of the patient cohorts.	• Ensure patients remain within specialist cancer centre for an optimal time and transferred to an appropriate care setting in a timely manner • Increased and consistent AHP input to the patient pathway to ensure a timely discharge
Service availability	ACT: 51 weeks per year; 66 hours per chair (M-F 12 hours; at 6 hours); 85% utilisation. This assumption also applied o trials activity.)utpatients: 2 x 4-hour session; 50 weeks per year; 5 ays/week. 60 minutes new appointment; 30 minutes eturn appointment with an 85% utilisation ed occupancy assumes 85% planned inpatient, 80% acute ssessment	Best practice general inpatient benchmark is 80-85%

2.5.2 The key changes proposed within this model are:

- An increase in planned care delivered at sites closest to home e.g. increased provision at St John's, note change in service delivery model partially implemented in 2019;
- Increased provision of planned care within non-acute/community-based locations e.g. supportive therapies; some cancer treatments delivered at East Lothian and Midlothian Community Hospitals; and
- Potential for shift of planned oncology inpatient care to NHS Fife.

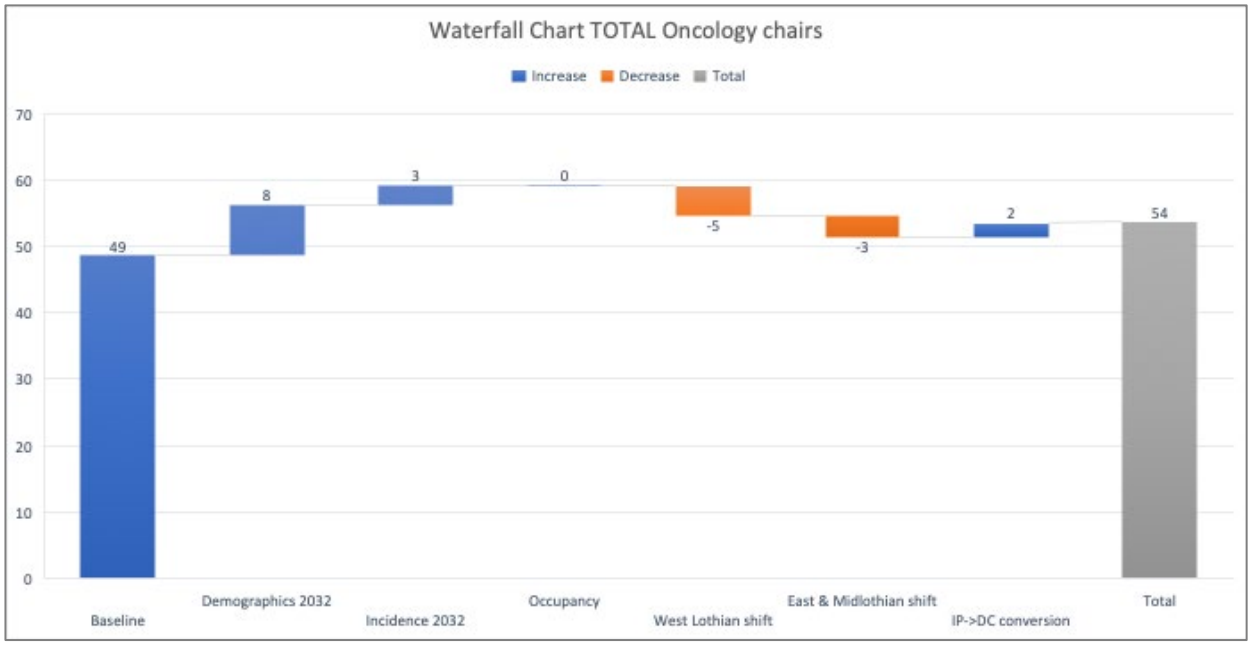
2.6 Requirements to Deliver the Optimum Model

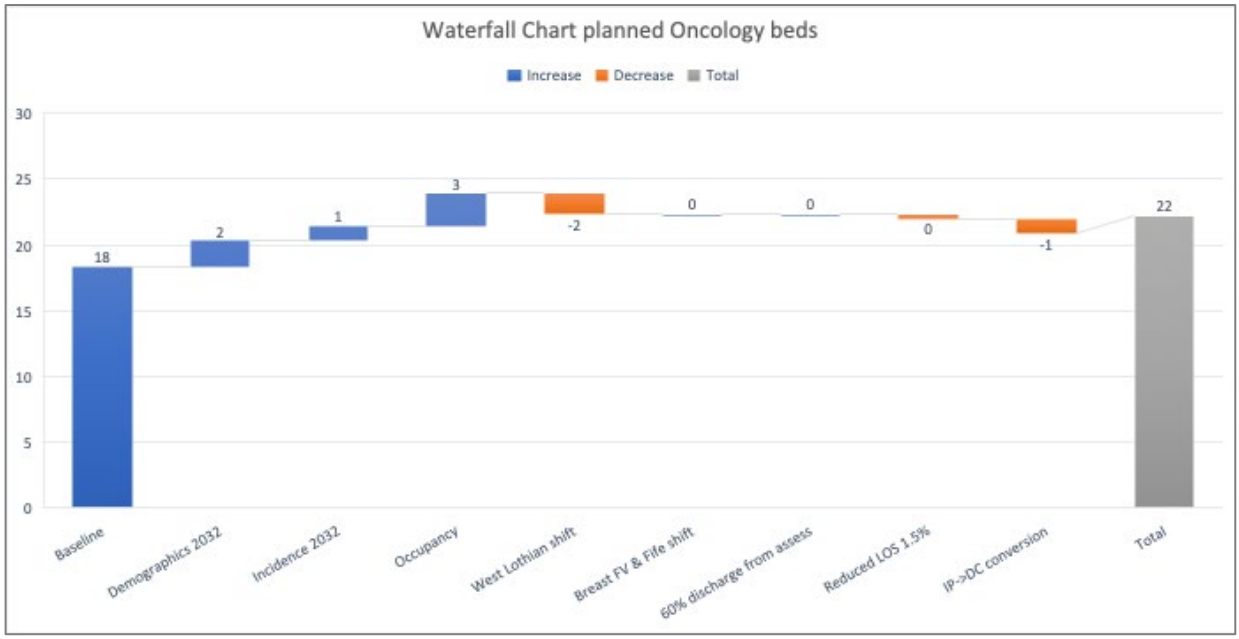
2.6.1 The table below summarises the oncology requirements for ECC to deliver the optimum model of care assumptions set out above. This assumes the required capacity is available within other locations (St John's Hospital, Midlothian Community Hospital, East Lothian Community Hospital and the regional sites). A summary of where this has an impact is presented within the conclusions and recommendations:

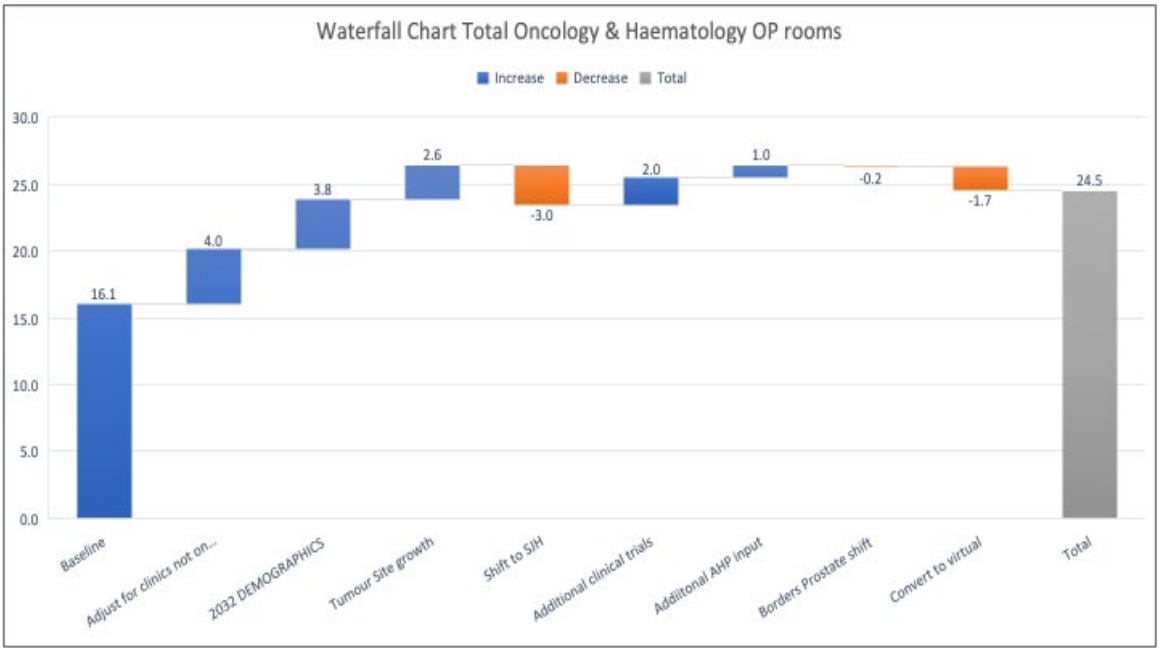
Figure 2-2: Planned Oncology Requirements – ECC

	Current	2027 Projection	2032 Projection
Planned Oncology Inpatient beds	**22**	**21**	**22**
SACT Chairs		42	44
Supportive Therapy Chair		9	10
Total Oncology Chairs	**31**	**51**	**54**
Outpatients (Oncology & Haematology)	**19**	**19**	**25**

2.6.2 Further information is presented below in the form of "waterfall diagrams" showing the variables increasing capacity requirements with any offset reduction due to the impact of optimising model assumptions.






Waterfall Chart Total Oncology & Haematology OP rooms
Increase
Decrease
Total
30.0
25.0
20.0
15.0
10.0
5.0
0.0
16.1
4.0
3.8
2.6
-3.0
2.0
1.0
-0.2
-1.7
24.5
Baseline
Adjust for clinics not on...
2032 DEMOGRAPHICS
Tumour Site growth
Shift to SJH
Additional clinical trials
Additonal AHP input
Borders Prostate shift
Convert to virtual
Total

2.7 Sensitivity Testing

2.7.1 A number of sensitivity tests were undertaken to evaluate the impact of potential scenarios; the impact compared to the outputs required from the optimum delivery model is shown below.

Figure 2-3: Sensitivity Test & Impact (2032 projection)

Scenario	Description	Impact		
		Beds	Day Spaces	Outpatients
Optimum Delivery Model	Core scenario adopting optimum delivery model assumptions.	22	54	25
Alternative growth rates	Growth per annum: Inpatients 5%; SACT 10%; Outpatients historical growth of 14% over 5 years; projected over 10 years	+14	+70	+19
Potential repatriation North East Fife flow from Tayside to SCAN	Annually c400 urgent suspicion of cancer (USOC) patients are referred from NE Fife to Tayside. In view of the current mutual aid being provided to NHS Tayside a potential scenario of repatriation of NE Fife patients to Fife for oncology treatment in SCAN. Noting the wider planning implications this would have for NHS Fife in view of increased (USOC) referral activity into Fife.	+38 patients p.a.	+14 patients p.a.	+13 session per week
NHS D&G patient flow to West of Scotland	Assume NHS D&G Oncology flows to West of Scotland in line with the Haematology flow.	-7.4 IP + 0.2 assess	-1 space (0.7)	-0.5 to 0.6 rooms

2.8 Workforce Impact

2.8.1 The proposed service model for planned care is likely to impact the future workforce within the following areas:

- Assumed workforce to support 12-hour SACT delivery, requires investment in Multidisciplinary team roles involved in SACT delivery pathway including prescribers, pharmacy services (clinical & technical) and nursing staff to support expanded

treatment activity in day-case SACT units. This may include the expansion of out-of-hours specialist support to ensure safe delivery of SACT.

- Requirement for enhanced roles at community / non-acute settings to deliver supportive therapies, immunotherapies, etc;
- A clear protocol and process in place for the management of oncology inpatient beds within NHS Fife;
- A clear protocol and process in place for the discharge and care of oncology inpatients closer to home when they no longer require specialist management in ECC
- Increased access to AHP services within specific pathways resulting in a requirement for additional AHP staff over 7 days; and
- A requirement that a community-based phlebotomy model is in place to support pre-treatment bloods.

3 Workstream B: Unplanned Care

3.1 Service Scope

3.1.1 Unplanned Cancer Care includes the areas:

- Unscheduled oncology care assessment and subsequent inpatient care.
- Unscheduled haematology care assessment (with subsequent inpatient care shown within Haematology, Workstream E below);
- Acute oncology services; and
- Palliative and End of Life Care.

3.1.2 Acute oncology is delivered at all regional sites and at SJH in Lothian. There is no acute oncology resource at the RIE.

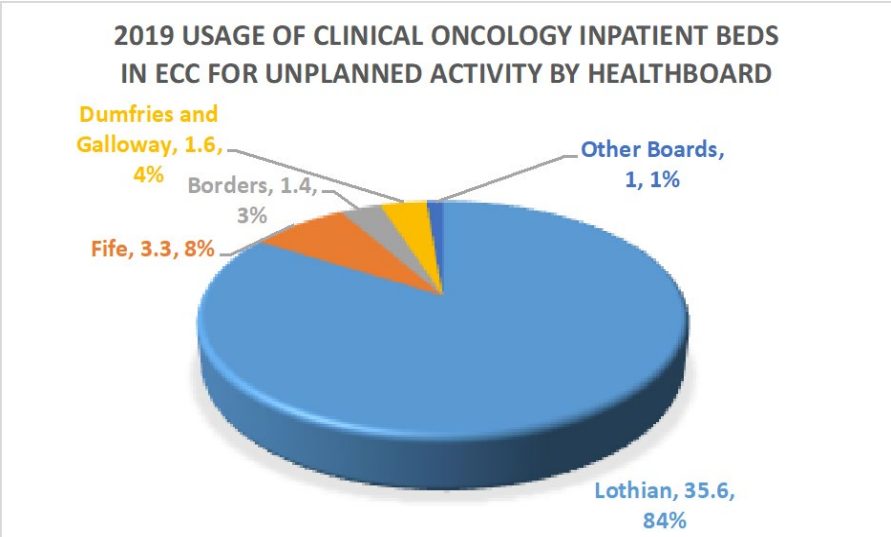
3.1.3 The unscheduled oncology assessment service is underpinned by the national Cancer Treatment Helpline (CTH) which directs patients to the most appropriate setting.

3.1.4 Unplanned Haematology patients in ECC present initially within the Cancer Assessment Unit (CAU), if a decision is made to admit then these patients are treated within Haematology inpatient beds.

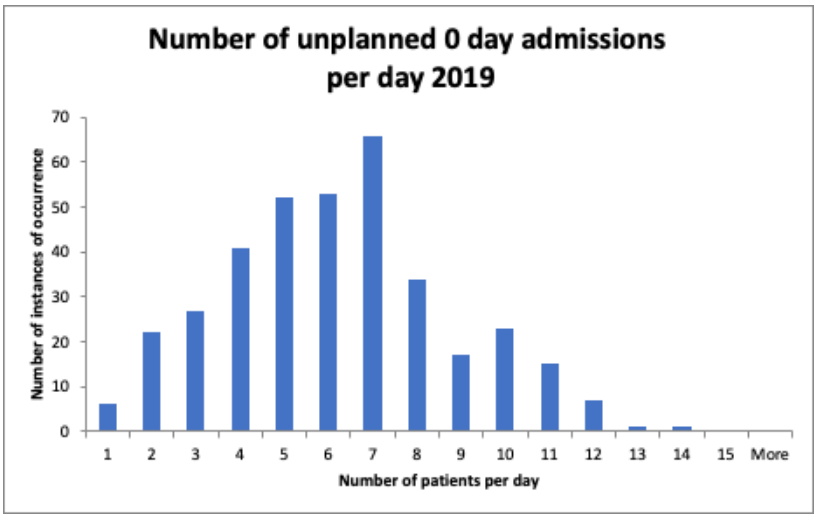
3.1.5 Palliative and End of Life Care (P&EOLC) is delivered across NHS Lothian with consultant input on all three acute sites.

3.2 Current Service Delivery

3.2.1 The chart below shows the usage of Oncology beds for unplanned activity within each board and at the ECC.



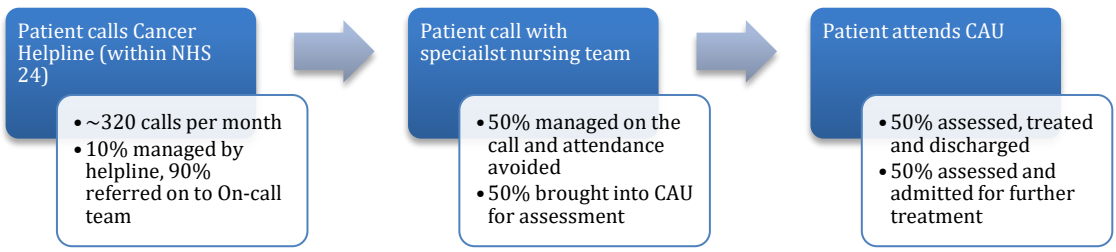
3.2.2 Further analysis of unplanned admissions with a length of stay of less than 1 day and directly discharged from the CAU is shown below:



3.2.3 The typical number of unplanned admissions per day for <1-day length of stay is 7, though the bell curve shape of the histogram indicates the natural variation which occurs in this number from day to day. All bed days (hours) associated with this activity have been included in the capacity outputs of Assessment spaces.

3.2.4 Aspects of the current assessment model in the ECC are unique to the site, particularly the involvement of the role of specialist's nurses in the on-call team managing activity referred from the Cancer Helpline. While the specialist nursing team have medical support, they largely manage this activity themselves.

Current flow



Palliative & End of Life Care (P&EOLC)

3.2.5 Palliative and End of Life Care is delivered across NHS Lothian with consultant input at all three acute sites. Patients are referred into the service from oncology and haematology; most often from an unscheduled care attendance.

3.2.6 The P&EOLC will provide symptom control, psychological support and liaise with other teams to ensure realistic goals for patients. Where appropriate they will refer to hospice colleagues.

3.2.7 There can be challenges in referrals within the current service delivery model which often results in patients not accessing P&EOLC at the appropriate time.

3.2.8 The number of referrals made to the service over the last three years by site is outlined below.

Figure 3-1: P&EOLC Referrals

	2019/20	2020/21	2021/2022
Western General	981	1040	1194
Royal Infirmary of Edinburgh (RIE)	729	820	1187*
St John's	584	566	684

*RIE increase reflects an uplift in workforce, plus change in personnel and approach to referrals in 2020

3.3 Future Model

3.3.1 There is significant national work being undertaken to look at Acute Oncology models across Scotland. The focus of the workshops has been to identify how the service could operate and to model the likely impact.

3.3.2 Through discussions held with key representatives from unplanned services across all areas, a range of assumptions have been developed to inform the optimum delivery model. These are set out in the table below.

Figure 3-2: Unplanned Care – Optimum Delivery Model Assumptions

Theme	Assumption	Source / Evidence base
Decentralised model	Shift to West Lothian to St Johns Existing flows to regional sites	• Note partial impact of increased services within 2019 baseline dataset • Current analysis demonstrates % unplanned at regional sites
Direct Discharge from Assessment	Model 60% direct discharge	2019 calculated at 47% • 2021 at quoted 60%
Convert to planned pathway	Potential to implement this, however, unable to quantify the impact at present.	A number of other sites operate this model with protocols and processes in place
Assessment period	24-hour assessment period assumed	To allow sufficient time for a care plan to be developed with subsequent admission made if required.
Length of stay	Based on length of stay distribution, there is a potential opportunity to model a trim point. Ongoing discussions are being held with the regional boards and the health and social care partnerships within NHS Lothian to agree an appropriate point of transfer to home board / non-specialist centre. It is recommended a Day of Care audit is undertaken to identify if any alternative care setting can be planned in the future for any of the patient cohorts.	• Ensure patients remain within specialist cancer centre for the optimal time and transferred to an appropriate care setting in a timely manner • Increased and consistent AHP input to pathway to ensure timely discharge
Service availability	52 weeks per year; 7 days per week CAU; bed occupancy 85% inpatients, 80% assessment	• Best practice guidance for general inpatient is 80-85%
Palliative & End of Life Care	Future model will include early assessment and intensive symptom monitoring in patients on SACT; adoption of Realistic Medicine and patient centred care. Potential for integrated acute and community roles in/outreach to provide P&EOLC across healthcare system. At this stage unquantified the impact but further work will be undertaken as part of the Outline Business Case.	• Realistic Medicine • Patient and carer engagement as part of OBC work

3.3.3 The key changes proposed within this model are:

- Increased unplanned care delivered at sites closest to home e.g. increased provision at St John's, note change in service partially implemented in 2019;
- Early discharge to either home boards (regional patients) or non-cancer specialist beds at an earlier point within pathway; and
- Early identification of P&EOLC patients to ensure timely access to the most appropriate service for them.

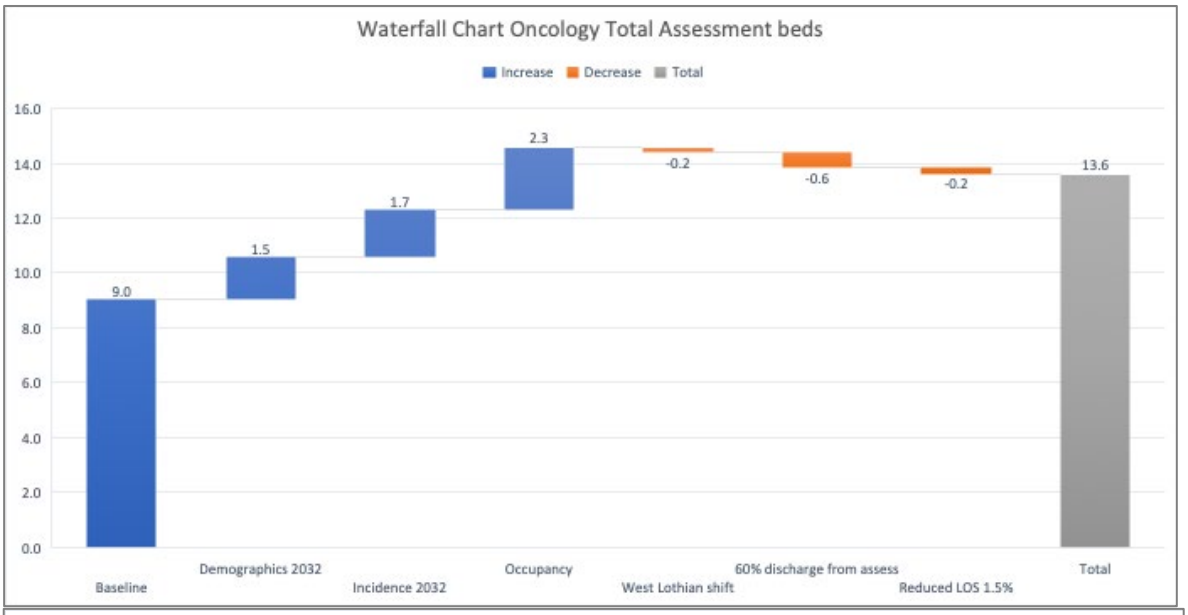
3.4 Requirements to Deliver the Optimum Model

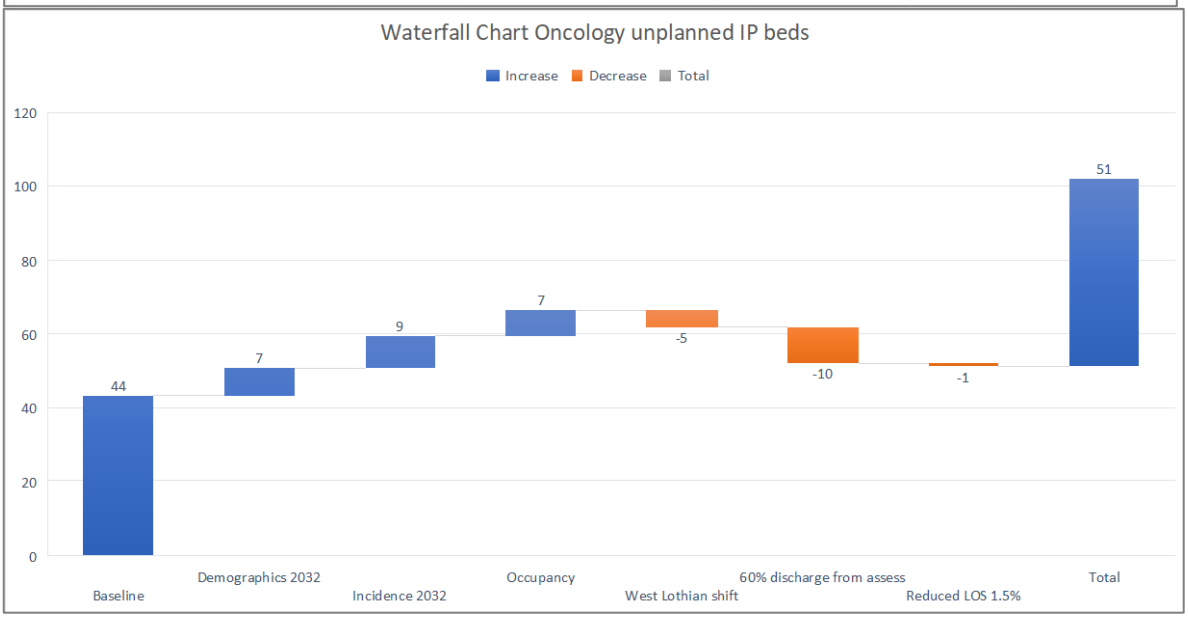
3.4.1 The table below summarises the requirements for ECC to deliver the optimum model of care assumptions set out above:

Figure 3-3: Unplanned Bed Requirements - ECC

	Current	2027 Projection	2032 Projection
Assessment Space	16	12	14
Unplanned Oncology Inpatient beds	47	47	53
Unplanned Beds (Assessment & Inpatient)	***63***	***59***	***67***

3.4.2 Further information is presented below in the form of "waterfall diagrams" showing the variables increasing requirements with any offset reduction due to optimising the service model assumptions.





3.5 Sensitivity Testing

A number of sensitivity tests were undertaken to evaluate the impact of potential scenarios; the impact compared to the outputs required from the optimum delivery model is shown below:

Figure 3-4: Sensitivity Test & Impact (2032 projections)

Scenario	Description	Impact	
		Beds	Assessment Spaces
Optimum Delivery Model	**Core scenario adopting optimum delivery model assumptions**	**53.5**	**13.6**
NHS D&G patient flow to West of Scotland	Assume NHS D&G Oncology flows to West of Scotland in line with Haematology flow	-1.6	-0.2

Potential repatriation North East Fife flow from Tayside to SCAN	Annually c400 urgent suspicion of cancer (USOC) patients are referred from NE Fife to Tayside. In view of the current mutual aid being provided to NHS Tayside a potential scenario of repatriation of NE Fife patients to Fife for oncology treatment in SCAN. Noting the wider planning implications this would have for NHS Fife in view of increased (USOC) referral activity into Fife.	+2.2	+120 patient p.a.
Alternative growth rates	5% per annum	+20	+4

3.6 Workforce Impact

3.6.1 The proposed service model for planned care is likely to impact the future workforce within the following areas:

- Acute oncology service
- A clear protocol and process in place for the management of oncology inpatient beds within NHS Fife;
- A clear protocol and process in place for the discharge and care of oncology inpatients closer to home when they no longer require specialist management in ECC
- Increased access to AHP services within pathways resulting in a requirement for additional AHP staff over 7 days; and
- Increased community-based resources to support end of life pathways with potential for in/outreach model and integrated workforce.

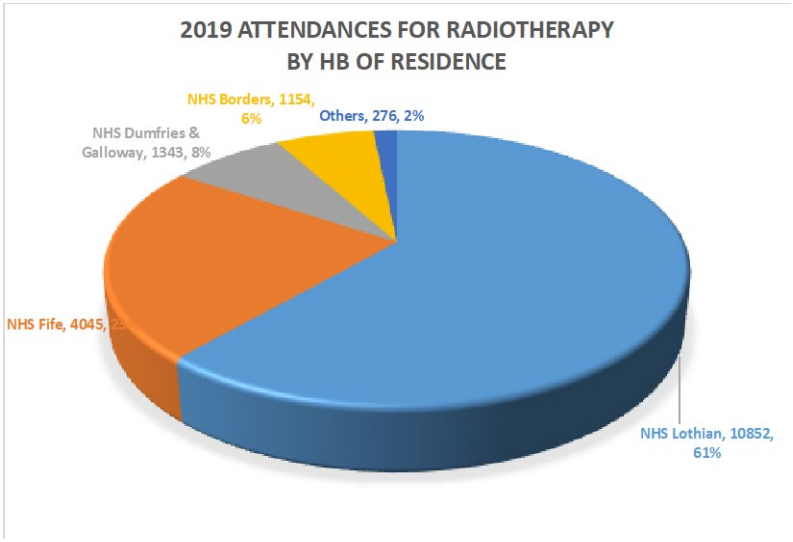
4 Workstream C: Radiotherapy

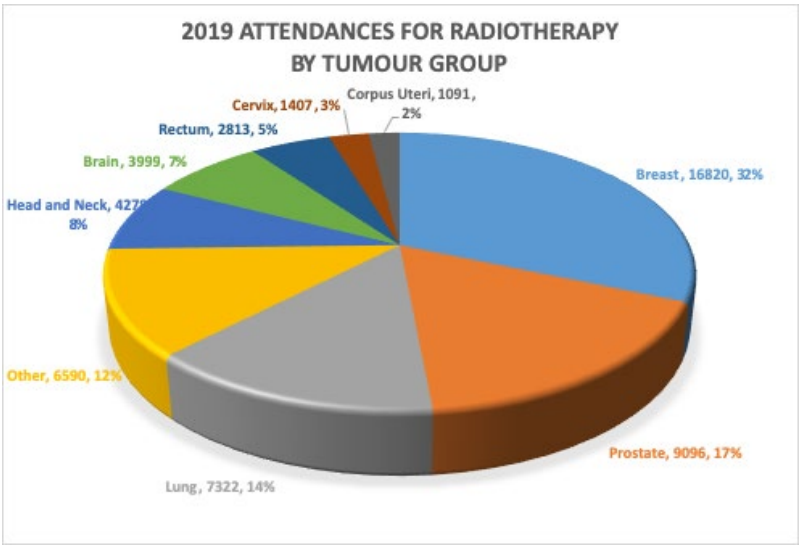
4.1 Service Scope

4.1.1 Radiotherapy services includes both the delivery and planning of treatment carried out at ECC; the provision of Brachytherapy is also summarised in this section.

4.2 Current Service Delivery

4.2.1 The charts below show the 2019 usage of linear accelerators (linacs) by board and tumour group.





4.2.2 The table below summarises the Brachytherapy activity in 2019:

	Patients
Prostate	93
Gynaecology	92

4.3 Future Model

4.3.1 Throughout the workshops held with representatives from planned services across all areas, a range of assumptions were developed to inform the optimum delivery model. These are set out in the table below.

Figure 4-1: Radiotherapy – Optimum Delivery Model Assumptions

Theme	Assumption	Source / Evidence base
Additional tumours groups receiving radiotherapy	• Pancreas & liver	• Provision of MR linacs will allow these patient groups to be treated
Change in fractionation rate per site	75% Breast from 15 to 5 • < 60% of Prostate from 20 to 5	• Change in practice since 2019 • Assuming continued trend for the future following predicted favourable outcome from the trial for nodal breast patients
Expansion of treatments	• Expansion of treatments for oligometastatic disease treated with SABR	• Not currently quantifiable, but treatment is very time-consuming and expected to grow both in terms of numbers of patients that will benefit and the number of sites of treatment each patient would have (up to 10 per patient) • This will increase the requirement for Linac treatment time above currently quantifiable levels
Any flow to alternative Linac types	• Access to a range of radiotherapy machines within the fleet at ECC • Tumour site flow to MR Linac for soft tissue visualisation	• Change in practice since 2019 • Service development introduction of MR Linac; addressed through service option appraisal/ sensitivity test
Increase capacity for research	• 10% of time assumed for research	• Commitment to increase clinical trials and research
Fractions per hour	Current 4; move to approx. 3.6 (blended rate to consider lower fractionation rates for Breast and Prostate)	• Recent change to reflect decreased fractions per patient
Brachytherapy Theatre time	1 hour/ cervical cancer treatment; 2 hours/ prostate cancer treatment	• Current care delivery plans
Service availability	245 days per year includes an allowance for 7 bank holidays, 10 service days (including 2 dosimetry days) based on a 5-day week service with a utilisation of 85%	• Best practice 80-85%

4.3.2 The key changes proposed within this model are:

- Inclusion of dedicated research capacity; and
- Specific tumour site treatment changes driven by enhancements in technology and treatments available.

4.3.3 The service model section will present a potential option which evaluates the development of a satellite radiotherapy unit within the East of Scotland region.

4.4 Requirements to Deliver the Optimum Model

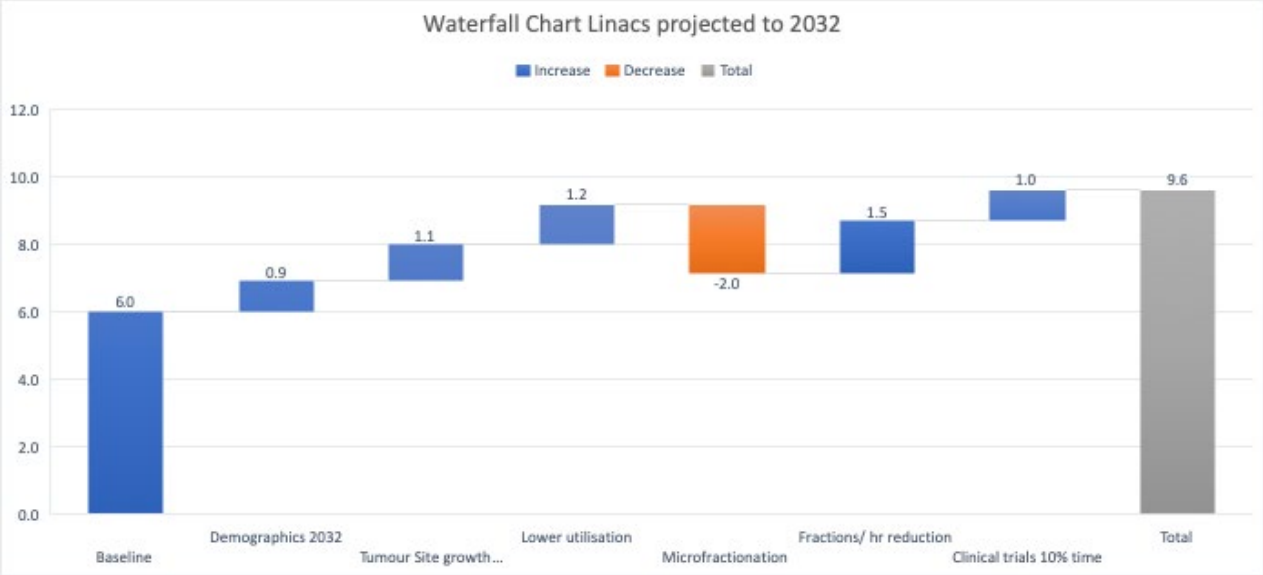
4.4.1 The charts below set out the requirements to deliver the optimum model of care assumptions that have been set out above:

Figure 4-2: Radiotherapy Requirements

	Current	2027 Projection	2032 Projection
Linear Accelerators	6	9	10
Radiotherapy review rooms[1]	3	4	5
Brachytherapy Theatre session	4	4-5	4-5
[1] Not included in outpatient clinic rooms in figure 2-2.			

4.4.2 The current brachytherapy service is delivered within the vacant Breast Surgery theatre slots or where this is not possible within main theatres on the Western General site. However, future projections for Breast Surgery indicate no vacant sessions therefore a specific brachytherapy theatre suite will be required.

4.4.3 Further information is presented below in the form of a "waterfall diagram" showing the variables:



4.4.4 By way of benchmark the new Velindre Cancer centre serving 1.5million; similar catchment to ECC has planned for 11 Linacs by 2031/32.

4.5 Sensitivity Testing

4.5.1 A number of sensitivity tests were undertaken to evaluate the impact of potential scenarios, the impact compared to the outputs required from the optimum delivery model is shown below:

Figure 4-3: Sensitivity Test & Impact – 2032 Projection

Scenario	Description	Linacs
Optimum Delivery Model	Core scenario adopting optimum delivery model assumptions	10 (9.6)
Potential repatriation North East Fife flow from Tayside to SCAN	Annually c400 urgent suspicion of cancer (USOC) patients are referred from NE Fife to Tayside. In view of the current mutual aid being provided to NHS Tayside a potential scenario of repatriation of NE Fife patients to Fife for oncology treatment in SCAN. Noting the wider planning implications this would have for NHS Fife in view of increased (USOC) referral activity into Fife.	*Awaiting data to model impact*
NHS D&G patient flow to West	Assume NHS D&G Radiotherapy flows to West of Scotland in line with the Haematology flow	-0.7

4.6 Workforce Impact

4.6.1 The proposed service model for radiotherapy is unlikely to change the types of roles required. However, there is considerable growth within radiotherapy requirements in line with other cancer services; this will result in the need for an increased radiotherapy workforce in the future. There are current challenges to recruitment to the service resulting in an enhanced need for national training and development in radiotherapy roles.

5 Workstream D: Breast Surgery

5.1 Service Scope

5.1.1 Breast surgery includes the following areas:

- Outpatients;
- Day Surgery; and
- Inpatient surgery.

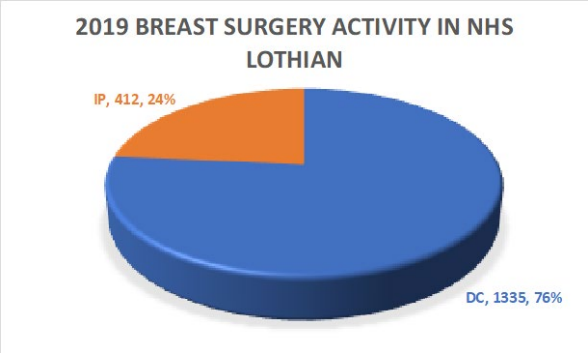
5.1.2 Outpatient clinics and surgery for Breast Surgery patients are delivered in ECC and St John's Hospital in Lothian, and by NHS boards in Borders, Dumfries and Galloway and Fife.

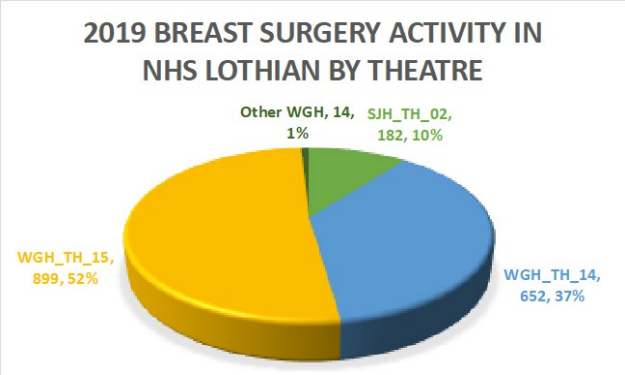
5.1.3 In addition, some NHS Forth Valley patients also currently receive their surgery for Breast cancer at ECC and are included in this review; this is linked to the South East Scotland Breast Screening which includes Forth Valley as well as the East region SCAN boards.

5.1.4 Breast Screening, mammography and breast radiology is out of scope for this review. It is proposed that the South East Scotland Breast Screening programme, currently based at Ardmillan Terrace, is co-located with the symptomatic breast service in the new ECC; the modelling and appraisal for this will be developed in the Outline Business Case.

5.2 Current Service Delivery

5.2.1 The charts below show the current breast surgery activity by inpatient, day case and location of theatres across Lothian.





5.3 Future Model

5.3.1 Through engagement with key representatives from Breast services across all areas, a range of assumptions have been developed to inform the optimum delivery model. These are set out in the table below.

Figure 4-4: Breast Surgery – Optimum Delivery Model Assumptions

Theme	Assumption	Source / Evidence base
Decentralised model	80% of activity from NHS Fife, Borders & Forth Valley is assumed to repatriate to its home board.	There is a requirement for an expansion to breast surgery capacity closer to home.
Shift to day case	2019 overall day case rate of 72.5%; no change modelled.	• Current level in line with British Associated of Day Surgery (BADS) rates; achieving 92.5% of specific procedures therefore limited opportunity
Change to length of stay	Based on length of stay distribution, there is a potential opportunity to model a trim point. Ongoing discussions	• Ensure patients remain within specialist cancer centre for the optimal time and

	are being held with the health and social care partnerships within NHS Lothian to agree an appropriate point of transfer. It is recommended a Day of Care audit is undertaken to identify if any alternative care setting can be planned in the future for any of the patient cohorts.	transferred to an appropriate care setting in a timely manner • Increased and consistent AHP input to pathway to ensure timely discharge
Service availability	• IP/DC Elective Surgery: 50 weeks/year. 5 days a week. • Bed occupancy 85% • Outpatients: 2 x 4-hour session; 50 weeks/year; 5 days/week. • New Patient Clinic at ECC is delivered via a One Stop model with imaging taking place the same day	Best practice planned inpatient length of stay - 85% Best practice for Outpatients in One Stop model requiring surgical and radiological capacity to be matched.

5.3.2 The key changes proposed within this model are:

- Repatriation of surgery for patients from NHS Fife, NHS Forth Valley and NHS Borders whose surgical need has been identified through the Breast screening programme, to their home Board.

5.4 Requirements to Deliver the Optimum Model

5.4.1 The table below summarises the requirements for ECC to deliver the optimum model of care assumptions set out above. This assumes the required capacity is available within other locations (St John's and the regional Boards). A summary of where this has an impact is presented within the conclusions section:

Figure 4-5: Requirements - ECC

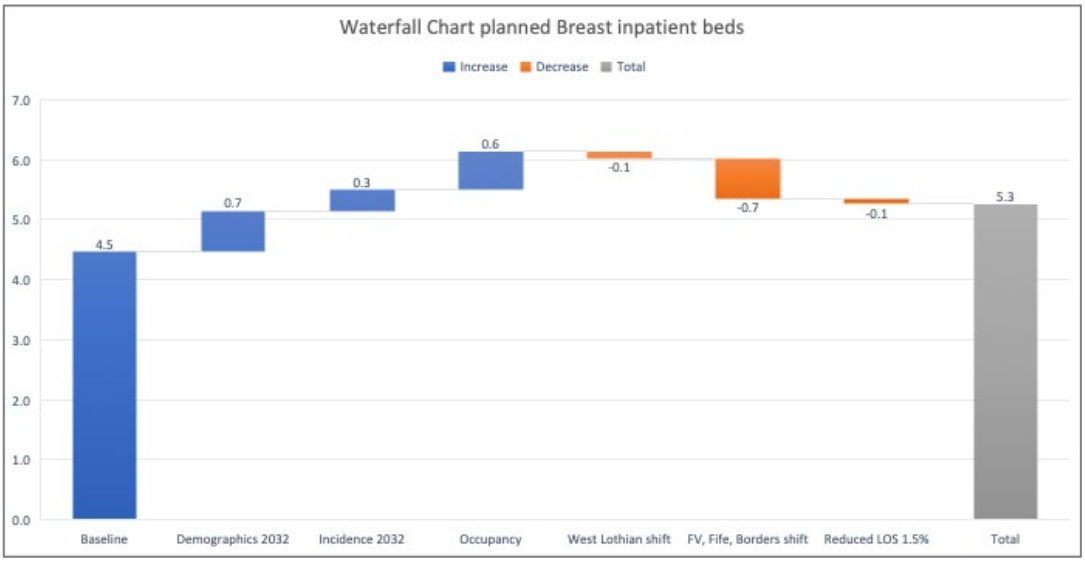
	Current	2027 Projection	2032 Projection
Outpatients	11	10	11.3
Inpatient Beds	3	4.9	5.4
Breast Unit – Theatres	15 sessions	16	18 sessions

5.4.2 A proportion of the outpatient clinics use a "one-stop" philosophy, requiring expertise both in the outpatient clinic environment as well as diagnostic and imaging support, including access to Radiology. Further work is required at OBC stage to review ensure the appropriate

levels of capacity are available in Radiology to support the optimal "one-stop" approach for patients, reducing the need for multiple attendances to the cancer centre.

5.4.3 Further analysis of the flow as part the Outline Business Case work will be used to determine the number of day case spaces to support the theatre sessions.

5.4.4 Further information is presented below in the form of a "waterfall diagram" showing the variables increasing requirements with any offset reduction due to optimised model assumptions.



5.5 Sensitivity Testing

5.5.1 A number of sensitivity tests were undertaken to evaluate the impact of potential scenarios; the impact compared to the outputs required from the optimum delivery model is shown below:

Figure 4-6: Sensitivity Test & Impact (2032 Projection)

Scenario	Description	Impact		
		Outpatients	Beds	Theatres
Optimum Delivery Model	Core scenario adopting optimum delivery model assumptions	11.3	5.4	20 sessions
Lower growth than projected	Feedback from clinical team suggested stable cancer incidence	-	-1	-5 sessions

5.6 Workforce Impact

5.6.1 The proposed service model for Breast Surgery is likely to impact the future workforce within the following areas:

- An increased requirement at regional centres, whilst minimal this would need to be considered in job planning.

6 Workstream E: Haematology

6.1 Service Scope

6.1.1 Haematology includes the following areas:

- Planned day case – SACT and non-SACT;
- Outpatients (included within section 2 Planned Care);
- Planned inpatient care; and
- Unplanned inpatient care (the assessment component described within the unplanned section and requirements included within the overall assessment beds).

6.1.2 In addition to ECC, Haematology is delivered at St John's Hospital in Lothian, and within NHS Fife. NHS Borders delivers Haematology SACT in BGH, while patients requiring inpatient Haematology are seen at ECC.

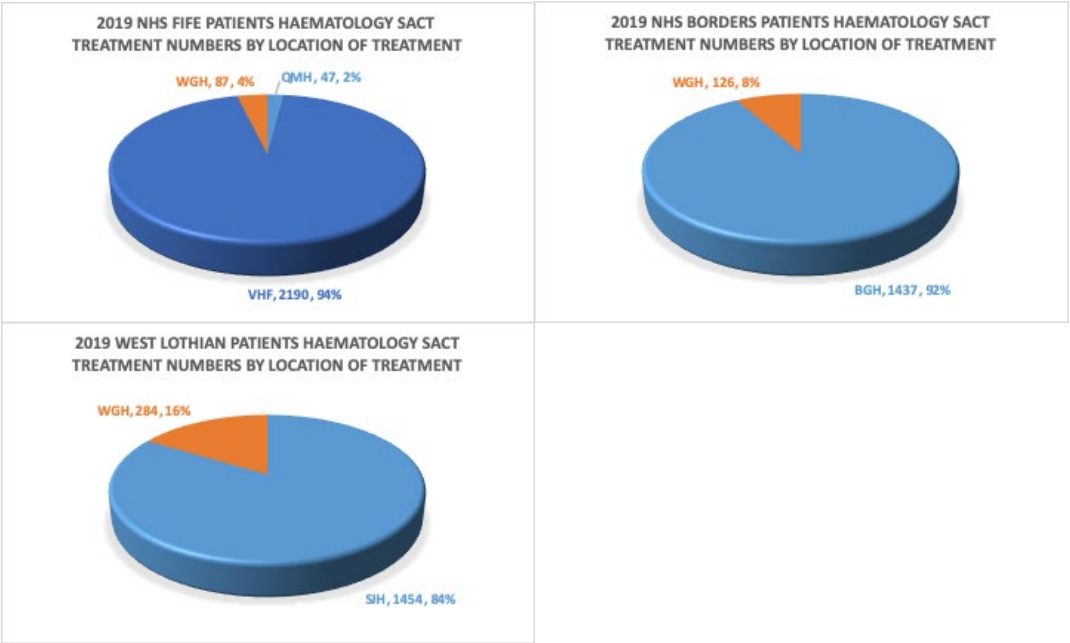
6.1.3 At NHS Dumfries & Galloway inpatient haematology is part of the West of Scotland regional service and not in scope for ECC.

6.1.4 The impact of CAR-T cell therapy has only initially been included within the projections as this is an ongoing service development and has only been introduced at ECC since 2022. This will be reviewed and quantified further as part of the Outline Business Case process when further information should be available.

6.1.5 The Haemophilia Centre at the Royal Infirmary of Edinburgh is out of scope for the ECC reprovision and therefore not included in this regional review.

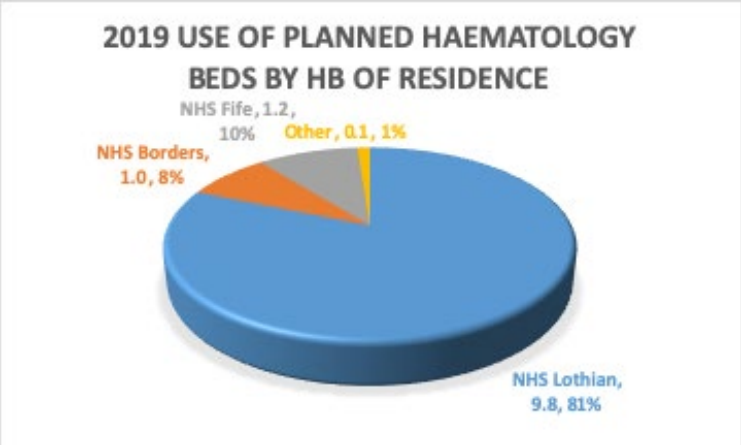
6.2 Current Service Delivery - SACT

6.2.1 The charts below show the level of SACT delivered within each board and at the ECC as well as the delivery of Haematology SACT for West Lothian patients split between ECC and St John's Hospital.



6.3 Current Service Delivery – Planned Inpatients

6.3.1 The current split of Haematology planned inpatient care treated within ECC by board of residence is shown below:



6.3.2 Limited Haematology planned bed use is taken up by regional boards. Over 80% of planned bed use for Haematology relates to NHS Lothian residents. Further analysis of the reason for stay has been undertaken and the proposed changes are included within the future model of care.

6.4 Future Model

6.4.1 Throughout workshops held with key representatives from planned services across all areas, a range of assumptions were developed to inform the optimum delivery model. These are set out in the table below.

Figure 6-1: Haematology – Optimum Delivery Model Assumptions

Theme	Assumption	Source / Evidence base
Increased access to clinical trials	Proportion of SACT delivery associated with clinical trials calculated as 16% of staffed chair hours. Assumed increase to 30%. The impact to outpatients was modelled using a weighting factor to take into account the increased number of attendances for trial patients.	Commitment to increase access to clinical trials across all areas.
Shift in care setting by treatment type	Inpatient to day case – 10% of Haematology one-night stays converted to day case. Shift supportive therapies to Midlothian & East Lothian Community Hospitals for respective populations; this is modelled within planned care.	Haematology 2019 - current shift to day case. Increase provision of supportive therapy outwith the acute hospital setting.
CAR-T cell treatment	At these volumes unlikely to impact on the total facility requirements. Further information and analysis will be undertaken as part of the Outline Business Case to determine if any further capacity should be planned for.	Current service provided within NHS Greater Glasgow & Clyde; currently circa 30 patients per annum (at 2022). Horizon scanning indicates likely to increase to 40 patients for multiple myeloma.
Transplant Service	No change modelled; 10% growth on 50-60 patients will not make a material different on the projected facility requirements.	ECC provide autologous haematopoietic transplants for Lothian, Borders, Fife and Highlands and Islands; providing 50-60 (UK highest number) transplants per year primarily for haematological malignancies. There is increasing evidence to support role of transplant in benign conditions such as MS with the

		potential to increase annual caseload by up to 10%.
Change to length of stay	Based on length of stay distribution, there is a potential opportunity to model a trim point for unplanned admissions. This will require further engagement with the service and health and social care partnerships within NHS Lothian to agree an appropriate point of transfer to home board / non-specialist centre and ensuring the correct capacity is available there.	• Ensure patients remain within specialist cancer centre for the optimal time and transferred to an appropriate care setting in a timely manner • Increased and consistent AHP input to pathway to ensure timely discharge
Service availability	• SACT: 51 weeks per year; 66 hours per chair (Monday - Friday 12 hours; Saturday 6 hours) at 85% utilisation • Outpatients: 2 x 4 - hour sessions; 50 weeks/year; 5 days/week. 60 minutes new outpatient appointments; 30 minutes return at 85% utilisation • Bed occupancy 85%	Best practice general planned inpatient 85%.

6.4.2 The key changes proposed within this model are:

- Change to day case to reflect changes made since 2019.

6.5 Requirements to Deliver the Optimum Model

6.5.1 The table below summarises the requirements for ECC to deliver the optimum model of care assumptions set out above. This assumes that the required capacity is available within other locations; this is outlined within the summary and conclusions:

Figure 6-2: Haematology Requirements – ECC

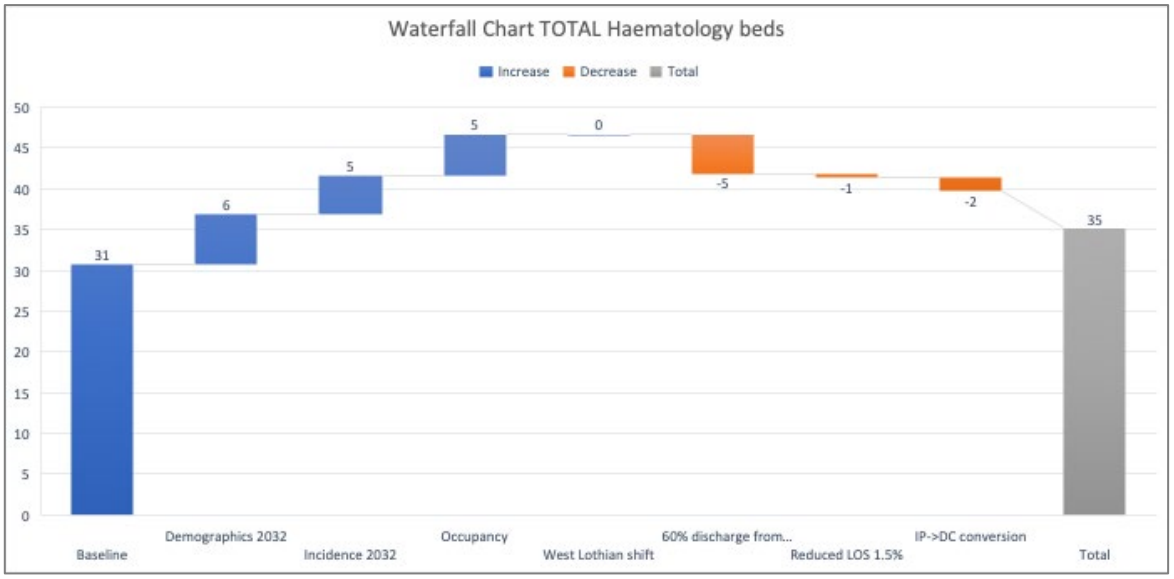
Haematology	Current	2027 Projection	2032 Projection
Total Inpatient Beds	19 [1]	30	35
SACT Chairs		11	12
Supportive Therapy Chair		13	15
Total Chairs	14 (capacity to 28)	24	27

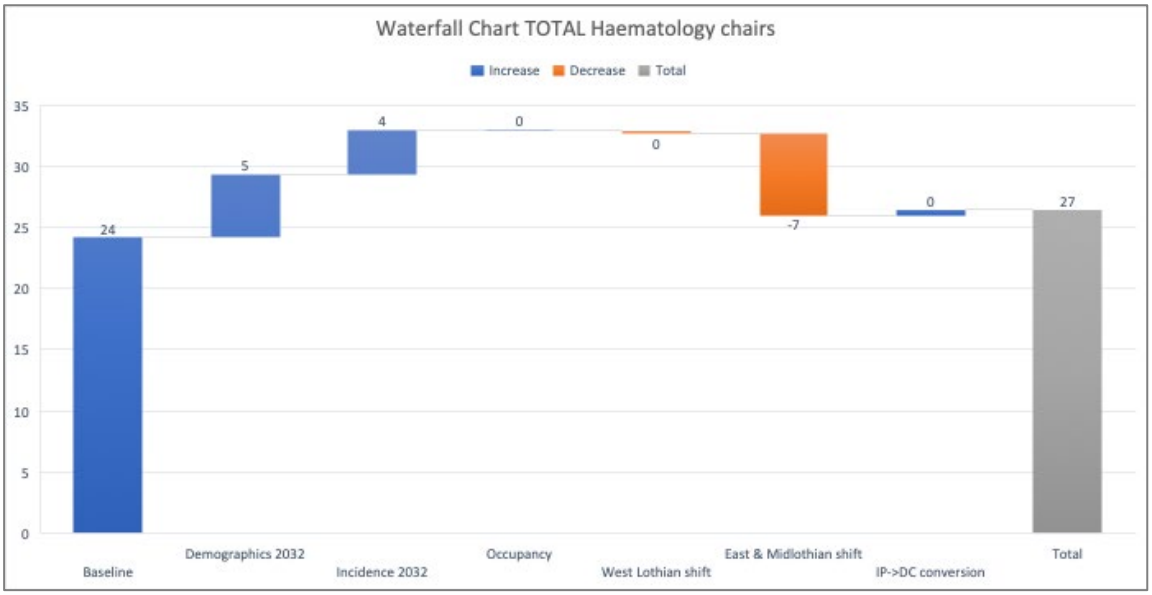
[1] 19 single rooms in 2022; there were 24 beds, in single and multi-occupancy rooms, for most of 2019

6.5.2 Discussions with the clinical team have indicated less likely to see the levels of incidence growth projected within Haematology; this would be 5 less beds from the projected numbers above. At this stage the planning assumption is to retain the projected bed number given likely growth and service developments in CAR-T cell and transplant service.

6.5.3 The impact of CAR-T cell therapy has been assumed to be included within the projections; however more analysis should be undertaken as part of the Outline Business Case to determine the likely bed requirements for this new service.

6.5.4 Further information is presented below in the form of a "waterfall diagram" showing the variables increasing requirements with any offset reduction due to optimising the model assumptions.





6.6 Sensitivity Testing

6.6.1 A number of sensitivity tests were undertaken to evaluate the impact of potential scenarios; their impact compared to the outputs required from the optimum delivery model is shown below:

Figure 6-3: Sensitivity Test & Impact

Scenario	Description	Impact		
		Beds	Day Spaces	Outpatients
Optimum Delivery model	Core scenario adopting optimum delivery model assumptions	35	27	4
NHS Borders impact of aseptic suite	Assumes % of SACT cannot be delivered at Borders and flows to ECC		<124 SACT episodes per annum	+1 session week

6.7 Workforce Impact

6.7.1 The proposed service model for planned care is likely to impact the future workforce within the following areas:

- Assumed workforce to support 12-hour SACT delivery; requires investment in Multidisciplinary team roles involved in SACT delivery pathway including prescribers, pharmacy services (clinical & technical) and nursing staff to support expanded treatment activity in day-case SACT units. This may include the expansion of out-of-hours specialist support to ensure safe delivery of SACT.
- There is a requirement for enhanced roles at community / non-acute settings to deliver supportive therapies, immunotherapies, etc; and
- There is a requirement for a community-based phlebotomy model to be in place to support pre-treatment blood analysis.

7 Summary Conclusions

7.1 Overview

7.1.1 This report provides an analysis and description of the proposed optimum delivery model for all elements of cancer care within East of Scotland region.

7.1.2 As part of the review the regional implications and required capacity has been quantified; this is provided in the summary below.

7.1.3 A comparison of the outputs from the modelling and analysis against the original Initial Agreement has been undertaken and highlights any area of significant difference.

7.2 Summary Requirements

7.2.1 The table below summarises the requirements for the new Edinburgh Cancer Centre; this is compared to the total requirements within the 2020 Initial Agreement:

Figure 7-1: Total Requirements – ECC

Specialty	Facility	Current	2027 Projection	2032 Projection	Initial Agreement SoA
Oncology & Haematology	**Assessment Spaces**	**16**	**12**	**14**	**16**
Oncology	Unplanned Inpatient beds	47	47	51	
	Planned Inpatient beds	22	21	22	
Total Oncology Inpatient beds		**69**	**68**	**73**	
Total Haematology Inpatient Beds		**19**	**30**	**35**	
Breast Surgery Inpatient Beds		**3**	**5**	**6**	
Total Inpatient beds		**91**	**103**	**114**	**106**
Oncology	SACT Chairs		42	44	
	Supportive Therapy Chair		9	10	
	Total Chairs	**31**	**51**	**54**	
Haematology	SACT Chairs		11	12	
	Supportive Therapy Chair		13	15	
	Total Chairs	**14 (capacity to 28)**	**24**	**27**	
Total Chairs		**45**	**75**	**81**	**79**
Oncology/Haematology	Outpatient rooms	19	19	25	
Breast Surgery		11	10	11	
Radiotherapy		3	4	5	
Total Outpatients rooms		**32**	**33**	**41**	**55**
Breast Surgery	**Theatres Sessions**	**15**	**16**	**18**	**20**
Radiotherapy	**Linacs**	**6**	**9**	**10**	**9**
Brachytherapy	**Theatre sessions**	**4**	**4-5**	**4-5**	**Max 10**

7.2.2 The majority of clinical area requirements confirm the Initial Agreement projections with the following observations:

- Overall inpatient and assessment beds are comparable with higher inpatient and less assessment capacity in the latest projections compared to the IA;
- Less outpatient rooms, however, further work is required to establish and include clinic activity that is not currently captured on TRAK and multi-disciplinary clinics where patient will see a range of healthcare professionals. Some adjustments have been included but requirement to review; and
- An additional Linac is projected in the latest modelling.

7.2.3 Further updates and analysis will be undertaken as part of the Outline Business Case to

reconfirm requirements.

7.2.4 To support the optimum delivery model both within NHS Lothian and at regional sites, the following is required as outlined in the tables below:

Figure 7-2: Requirements –Other locations within NHS Lothian

	St John's		Midlothian		East Lothian	
	Current	2032	Current	2032	Current	2032
Assessment Space	-	1				
Inpatient beds	-	5				
Total Inpatient & Assessment Beds	**0**	**6**				
Total Chairs	**21**	**17**	**0**	**5**	**3**	**5**
Outpatients	**2**	**5**				
Breast Unit – Theatres	2 sessions	2 sessions				

Figure 7-3: Requirements –Regional sites – 2032 Impact

	Fife	Borders	Forth Valley
Inpatient Beds	<1 bed Breast Surgery		<1 Bed Breast Surgery
Chairs	+14 patients pa	<124 SACT episodes pa -0.1 bed; -8 sessions per annum	
Outpatients		+1 session/week additional clinics	
Theatres	+1 session Breast Surgery		+1 session Breast Surgery

7.2.5 The tables above identify the impact of the proposed model; further work is required to ensure this capacity is available in addition to current. If these facilities **cannot be** provided within the locations then the requirements for ECC would need to be reviewed.

7.3 Workforce Implications

7.3.1 There are significant workforce implications to implement the optimum delivery model. These include:

- Overall the majority of service areas are increasing in requirements; most notably SACT and Radiotherapy requiring significant additional workforce;
- Enhanced roles at community / non-acute settings to deliver supportive therapies immunotherapies, etc;
- Clear protocol and processes in place for the management of oncology inpatient beds within NHS Fife;
- Clear protocol and processes in place for the repatriation of patients to home Boards;
- Increased access to Allied Health Professional services within pathways resulting in requirement for additional AHP staff over 7 days;
- Increased access to Allied Mental Health Professional services within pathways;
- Requirement that a community-based phlebotomy model is in place to support pre-treatment bloods;
- Increased community-based resources to support end of life care;
- Assumed workforce to support 12-hour SACT delivery; requires investment in Multidisciplinary team roles involved in SACT delivery pathway including prescribers, pharmacy services (clinical & technical) and nursing staff to support expanded

treatment activity in day-case SACT units. This may include the expansion of out-of-hours specialist support to ensure safe delivery of SACT; and

- Adoption of the findings and recommendations from the acute oncology national review.

8 Alternative Regional Options

8.1 Overview

8.1.1 A number of service options have been developed to deliver cancer services within the East of Scotland network; they have considered potential alternative regional configurations.

8.1.2 An evaluation of the alternative options has been undertaken and is presented within this section.

8.2 Alternative Regional Options

8.2.1 Three specific regional options have been developed and are summarised below; including an analysis of the advantages (strength and opportunities) and disadvantages (weaknesses and threats). The optimum delivery model will facilitate all the performance improvements set out within the earlier sections including delivering more elements of care closer to home.

Figure 8-1: Alternative Service Configuration Options

	Do Nothing	Optimum Delivery Model	Decentralised Radiotherapy Model
Description	• Impact of demographic change and tumour site growth; no change to service delivery model	• Change to planned care: shift in care setting; increased clinical trials across all care settings • Change to unplanned care: increased direct discharge; reduced attendance; shift to planned care • Adoption of latest radiotherapy treatment techniques	• Development of a satellite radiotherapy unit within the East of Scotland network. Assumed to be located on an acute site within the East of Scotland
Advantages (Strengths & Opportunities)	• Limited change • Avoids risk of insufficient community provision	• Increased care at home/community setting • Reduced length of stay • Shift unplanned to planned care • Ability to offer increase number of options to patients • Seen as Centre of Excellence – easier to recruit and retain staff	• Care closer to home for some residents • Increased additional future capacity options • Easier to accommodate any changes to regional flows from Tayside • May address areas of unmet need where patients not opted for radiotherapy due to geography
Disadvantages (Weaknesses & Threats)	• Increased stay in hospital • Less care delivered at home • Requirement of sufficient increase in workforce, estate and costs • Unable to offer increased number of treatment options	• Additional resources within community • Risks associated with change in modelled assumptions impacted bed requirements • Less service resilience if concentrated on single site	• Split site working for Radiotherapy staff • Potential diseconomies of scale • Challenge to maintain skills and training of staff deployed at satellite site • Unable to offer specialist treatments /newest technologies at satellite site may impact on equity of access to new/trial treatments/technologies • Recruitment challenge to maintain two services • Location maybe sub-optimal and not address population density due to need to locate on an acute site

8.2.2 The table below provides an evaluation of each option against the investment objectives and critical success factors of the project.

Figure 8-2: Alternative Service Configuration Options

		Do Nothing	Optimum Delivery Model	Decentralised Radiotherapy Model
	Assessment against Investment Objectives			
1	Increase service capacity and sustainability to meet demand and provide timely service access for patients	✗	✓	✓
2	Design buildings to provide appropriate facilities for clinical care that meet all required standards, allow service collaboration and provide an improved patient experience	?	✓	✓
3	Improve recruitment and retention of specialist staff Offer a range of education, training, research and academic opportunities for professional development	✗	✓	?
4	Offer a wide range of specialist cancer therapies to the patients of South East Scotland	?	✓	✓
5	Integration of Clinical Research and Trials with Cancer Services to enable access to an expanded range of trials and improve patient outcomes	?	✓	?
Assessment against Scottish Government infrastructure investment objectives/ Critical Success Factors				
1	Person Centred	✗	✓	✓
2	Safe	✓	✓	✓
3	Effective Quality of Care	✗	✓	?
4	Health of Population	?	✓	✓
5	Value & Sustainability	✗	✓	✗
Evaluation		✗	✓ **Preferred way forward**	? **Possible service option**

8.2.3 The rationale for each assessment is shown in Appendix A.

8.3 Recommendations

8.3.1 Based on the initial evaluation of the alternative service configuration options the preferred service option, which meets all investment objectives and critical success factors, is the optimum delivery model.

8.3.2 The decentralised model meets a number of investment objectives and critical success factors, however, is unlikely to meet the critical success factor in relation to value for money and sustainability metrics. This is as a result of duplication of some services; split site working and increased workforce sustainability issues. Further work is recommended as part of the Outline Business Case to establish the overall quantified benefits and risks of a decentralised radiotherapy to confirm whether this and if this option is feasible.

9 Recommendations & Next Steps

9.1 Overview

9.1.1 A detailed stakeholder engagement process has been undertaken working with key members of the clinical teams across both Edinburgh Cancer Centre and regional Boards.

9.1.2 This engagement exercise has helped to establish the optimum delivery model. This seeks to optimise care delivered as close to home through the most efficient and effective means utilising the latest technologies and innovations. There is a clear ambition to deliver a greater level of clinical trials across all care areas ensuring equity of access across the region.

9.2 Recommendations

9.2.1 It is recommended that this model is adopted for the future delivery of cancer services within East of Scotland; noting there are impacts at both regional level and other NHS Lothian sites as well as the new ECC to be implemented to support the delivery

9.2.2 Prior to developing the Outline Business Case it is recommended a Day of Care audit is undertaken to identify if any alternative care setting can be planned in the future for any of the patient cohorts.

9.2.3 Further analysis of an alternative regional configuration option has been considered which evaluates the potential for a decentralised radiotherapy service with the inclusion of a satellite site within an East of Scotland region.

9.2.4 The initial evaluation against objectives and critical success factors indicates the decentralised radiotherapy is less likely to deliver all investment objectives and meet all critical success factors compared to the optimum delivery model.

9.2.5 Further work is recommended as part of the Outline Business Case to establish the overall quantified benefits and risks of a decentralised radiotherapy and if this option is feasible.

9.3 Next Steps

9.3.1 A clear implementation plan to deliver the future model of care should be established as part of Outline Business Case development. This should include steps to identify the capacity required within both regional sites and other NHS Lothian locations to deliver the optimum model.

9.3.2 Further work is required to identify the impact of new treatment regimens including CAR T-cell treatment as only minimal provision and growth has been included.

9.3.3 The revised IA submission will reflect and update on the proposed model of care outlined within this report.

9.3.4 Initial review of the alternative regional configuration options which proposed a decentralised radiotherapy model suggest this model would be less likely to meet all critical success factors and deliver the investment objectives than the optimum delivery model proposed. This is in the main due to the workforce pressures, sustainability issues and overall less likely to deliver value for money. This should be reviewed and reconfirmed as part of the OBC process when benefits and risks will be quantified.

9.3.5 There is ongoing need to consider the overall workforce requirements and to establish likely training and development programmes required to deliver the range and number of roles required. This should be undertaken on a regional basis to avoid de-stabilising workforce. There is already existing work being undertaken through South East Scotland Cancer Network (SCAN) which this can feed into

Appendix A: Rationale for Service Option Scoring

			Do Nothing	Optimum Delivery Model	Decentralised Radiotherapy Model
		Assessment against Investment Objectives			
1	Increase service capacity and sustainability to meet demand and provide timely service access for patients		✗ • Unable to meet demand growth rates • Unsustainable service in terms of space and workforce required to meet demand growth with no service improvement	☑ • Some elements of growth offset by performance improvements resulting in more sustainable level of demand • Increased care within regional boards	☑ • Some elements of growth offset by performance improvements resulting in more sustainable level of demand • Increased care within regional boards
2	Design buildings to provide appropriate facilities for clinical care that meet all required standards, allow service collaboration and provide an improved patient experience		? • Significant increase in requirements; concentrated on ECC site. • Less services closer to home that optimum delivery model	☑ • Increased requirements at ECC and within regional boards • Improved patient experience providing greater elements of care closer to home	☑ • Increased requirements at ECC and within regional boards • Improved patient experience providing greater elements of care closer to home
3	Improve recruitment and retention of specialist staff Offer a range of education, training, research and academic opportunities for professional development		✗ • Likely unable to recruit and retain volume of staff required • No increased research within Do Nothing option	☑ • Sustainable level of services within ECC and regional boards • Increased opportunities for advanced practice and integrated roles within range of setting	? • Potential recruitment challenges within decentralised radiotherapy site; additional workforce through split site working • Increased opportunities for advanced practice and integrated roles within range of setting
4	Offer a wide range of specialist cancer therapies to the patients of South East Scotland		? • Range of services offered but no change to what is offered • No opportunity to increase the volume of specialist or new treatments	☑ • Range of specialist treatments, increased range of radiotherapy techniques included in service model	☑ • Range of specialist treatments, increased range of radiotherapy techniques included in service model • Unable to offer specialist radiotherapy at satellite sites which may result in inequity of access
5	Integration of Clinical Research and Trials with Cancer Services to enable access to an expanded range of trials and improve patient outcomes		? • No increase in clinical trials within do nothing option	☑ • Increased range of clinical trials across all care settings	? • Increased range of clinical trials • Unable to offer access to radiotherapy clinical trials at satellite site which may result in inequity of access to trials
			Do Nothing	**Optimum Delivery Model**	**Decentralised Radiotherapy Model**
		Assessment against Scottish Government infrastructure investment objectives/ Critical Success Factors			
1	**Person Centred**		✗ • Does not offer care closer to home either increased at regional sites or use of non-acute setting	☑ • Optimum range of services offered closer to home at regional sites and non-acute setting	☑ • Optimum range of services offered closer to home at regional sites and non-acute setting • Includes delivery of radiotherapy for some closer to home
2	**Safe**		☑ • Safe provision of services	☑ • Safe provision of all services maintained	☑ • Safe provision of all services maintained
3	**Effective Quality of Care**		✗ • Ineffective as does not optimism care delivery • Does not offset any of demand growth with performance improvements	☑ • Effective delivery model proposed; optimising what can be delivered at ECC and other locations	? • Effective delivery model proposed; optimising what can be delivered at ECC and other locations • Maybe some inefficiencies through split site working of radiotherapy and potential inequity of access to trial and specialist techniques
4	**Health of Population**		?	☑	☑

			• Challenges meeting the level of demand projected as no improvements	• Ability to meet future demand through combination of increased capacity and service improvements • Ability to offer new treatment regimens and increased access to clinical trials	• Ability to meet future demand through combination of increased capacity and service improvements • Ability to offer new treatment regimens and increased access to clinical trials
5	**Value & Sustainability**		✕ • Unsustainable level of service provision • Does not offer value for money	✓ • Sustainable service model proposed • Optimises what can be delivered from range of locations as well as ECC	✕ • Likely unsustainable satellite site with recruitment challenges and split site working • Duplication leading to less value for money
Evaluation			✕ **Does not meet critical success factors or deliver investment objectives**	✓ **Preferred Way Forward -meets all critical success factors and delivers investment objectives**	**?** **Possible service option - partially meets critical success factors and investment objectives**

Appendix 12: Critical Care Services for WGH

Separate to this project for ECC reprovision, an Initial Agreement for reprovision of Critical Care facilities at the Western General Hospital was approved by NHSL Board in December 2021.[3] This covers Level 3 ITU and Level 2 HDU capacity for all specialities at WGH, including capacity for Haematology / Oncology / Breast Surgery patients from the ECC.

In line with the service model review and bed model outputs in Appendix 11, the number of Level 3 and 2 beds required by Haematology and Oncology patients is likely to increase over and above that already provided by the existing Stem Cell Transplant, High Dependency and Critical Care Facilities.

From discussions with the NHS Lothian Critical Care Team regarding how best to provide a critical care facility for the site, the following needs must be met:

- The need to ensure patients requiring multi-organ support and specialist care are cared for by appropriately experienced staff. It was agreed that this should remain the remit of Intensivists and critical care experienced nursing staff. Given the national shortfalls of anaesthetists and nursing staff, it is important that the critical mass is retained in a single service.
- High Dependency (HDU) facilities suitable to the provision of Stem Cell Transplant services and Advanced Therapeutics (bone marrow – single organ failure), should be managed by specialty services, as at present, with access to Level 3 Critical Care remaining adjacent and on site.
- Location of Intensive Treatment Unit (ITU) / High Dependency Unit (HDU) facilities in a central location. All relevant adjacencies will be taken into consideration at planning stage.

The modelling for the Critical Care IA is based on historical occupancy, future service developments, population growth, and increases in cancer prevalence and incidence.

The preferred option of Reprovision of Critical Care into Ward 52 is considered a medium to long-term solution, as it provides a degree of future-proofing for the site. The proposed space could accommodate a further two beds should the bed base be required for Critical Care.

The estimated capital costs address issues relating to fire safety, ventilation provision, isolation room provision and water contamination. They also allow for a larger footprint which will enable the space to better comply with modern healthcare standards for a critical care unit, for example, by improving bed space. The preferred location also improves clinical adjacencies. These developments would enable the programme to bridge the care deficit that patients are currently exposed to, thereby improving quality, safety, and patient experience, whilst also improving the environment for staff, and enabling safer delivery of care.

NHS Lothian are now working on (1) Achieve Excellent Design Evaluation Toolkit (AEDET), (2) NHS Scotland Design Assessment Process and (3) Key Stage Assurance Review for Initial Agreement, with a view to submitting the Initial Agreement for this separate project to CIG mid 2022.

The ongoing provision of cancer services at WGH and the future model for ECC is dependent on the provision of critical care, however this is treated as a separate programme of work and is excluded from the scope of this IA.

[3] [To add reference once IA is CIG approved and published]

Appendix 13: Diagnostic Services Hub for WGH

It is recognised that many of the pathway transformations and service improvements required for the Cancer Service Model are reliant on clinical services that are essential in the patient's cancer journey, and yet are outwith the ECC.

Having proximity to these on the WGH will allow the most efficient pathways for patients to be developed, as well as allow the development of these services for future sustainability.

In order to achieve the stated *Investment Objectives* the service must be designed around transformed models of cancer care with proximity to the key **Diagnostic Services** below:

- Imaging
- Laboratories
- Nuclear Medicine Physics – NMP

The high level, strategic vision for inclusion of each of these in a ***'Diagnostic Services Hub for the Western General Hospital'*** has been provided by key representatives from each area to ensure relevant expertise has been incorporated in ECC considerations, and that plans are being developed in line with existing NHS Lothian strategy.

This 'hub' will be a physical co-location of some specialties, with the strategic and operational alignment of other services needed to underpin cancer (and other) pathways.

The provision of these services will be designed in such a way as to support and benefit all services based on the Western General Hospital site. This will be a separate programme of work to the ECC reprovision, and it is not for this IA to second-guess the outcome of the strategic assessment and scoping of this project. As a key dependency for ECC, NHS Lothian will progress the strategic assessment and scope of the demand for these services across all specialities on the WGH site in parallel with the Outline Business Case process for the ECC.

Imaging

The concept of an 'Essential Services Hub' provides an opportunity to design a new Imaging Department which would maximise staffing efficiencies and economies of scale in order to adequately support the needs of services on the Western General Hospital site.

Existing Arrangements

PET CT and MRI:- These two services are currently delivered in collaboration with Edinburgh University on the Bio-Quarter North campus within the Cancer Research Imaging Centre. There is also sited within the unit a Cyclotron which generate the radioisotopes needs for PET imaging.

Nuclear Medicine:- This service is delivered on the RIE and WGH sites and supports a number of cancer specialist services including of both children and adults.

Breast Services:- The Edinburgh Breast Unit (EBU) supports the management of patients with breast cancer and is an element of the current Cancer Services model. The regional Breast Screening Progame is current managed from Ardmillan Place by Cancer Service as a designated service and links into the EBU with onward referral of patients diagnosed with cancer from the screening service.

MRI and CT:- Although cancer diagnosis is made on all acute sites the WGH CT/MRI services support the majority of patients through their treatment review and long term onward management/review. A number of patients do have review scans locally on other sites including SJH and the RIE.

Ultrasound:- Is offered where appropriate to cancer patients for staging treatment review and monitoring of treatment at a number of sites including community and acute hospital/centres

Interventional Imaging:- There is a need for some cancers services for Radiology to support the treatment plan or palliative care through specialised interventions. Such procedures are performed on both the Bio Quarter North (RIE, DCN) and WGH.

Drivers for Change

- Waiting times as short as possible
- Sufficient time available for patient to feel valued
- Reporting, diagnostics and multidisciplinary team monitoring
- More time for staff continuing personal development which should ultimately lead to increased quality of imaging and improved patient experience

Future Vision

In order to achieve these aims the requirements are;

- Increase scanning capacity by opening up additional sessions on current equipment
- Commissioning of additional and/or new Imaging modalities for WGH site in readiness for completion of ECC
- Contrast imaging for cancer patients
- Increase number of CT/MR scanners to build in a buffer so scanners run at optimum capacity (never over 100% capacity) and to allow room to cope with breakdowns and peaks in demand
- Improve reporting system -alert when scans have been reported rather than relying on a paper copy or manual searching.
- Improved communication between services
- Interventional work is key to supporting cancer service; on both WGH and RIE sites depending on the specialism.

In order to move this forward, the Radiology team will;

- Focus on work force planning
- Submit a Business Case for additional scan resource for the time
- Allow staff to attend MDTs for educational purposes (when staffing allows)
- Look at ways to increase the study budget for post grad education
- Review pathways so patients can be sent for immediate scanning where possible
- Implement Patient Focussed Booking (PFB) when immediate scanning not possible (RTS project)
- Implement a robust system for patients being scanned locally to ensure referrals are received in the right place in a timely manner
- Investigate a way to identify that scans are completed when performed out with Lothian and ensure radiology reports for these patients are available
- Use electronic paper record (Trak) to flag up verification of reports against a list of patients

Laboratories

The concept of an 'Essential Services Hub' provides an opportunity to re-provide the blood Sciences Lab on the WGH site.

Existing Arrangements

Blood Sciences (Biochemistry, Haematology and Blood Transfusion) on the WGH site is currently provided in 50 year old portakabin accommodation which is no longer fit for purpose. There are also Blood Sciences services provided at RIE and SJH.

The Centre for Laboratory and Forensic Science (CLFS) capital project will propose re-provision and centralisation of histopathology and genetics on the Royal Infirmary Site. NHS Lothian are to identify resource for working up an Initial Agreement or this development.

Microbiology is split between RIE and the SJH sites with the larger lab located at the RIE site.

Genetic services are provided on both the RIE and WGH site.

Drivers for change

There will be no proposed change to the services provided on each site due to the requirement of specialist equipment, IT programmes and staff which makes de-centralisation an unattractive option.

Rapid access to blood sciences is an essential component in the monitoring and treatment of cancer patients. The Blood Sciences Lab at WGH currently receives 50% of its workload from GP practices and the other 50% from the WGH site.

Future Vision

The future vision for the laboratory service includes:

- A purpose built Blood Sciences Lab with accommodation for flexible use as the options for automation in blood sciences develops
- Lab to service GPs as is currently the arrangement (and could potentially grow) as well as the WGH site
- Would require proximity to the Cancer Centre to allow timely delivery of SACT.
- Would required proximity to serve the rest of WGH site.

Service Provision

Cancer treatment services will primarily require monitoring from Blood Sciences and Blood transfusion services on site. Centralised genetics, microbiology and histopathology services at the proposed RIE (CLiFS building Bioquarter) if successful will have no day to day impact on cancer centre service delivery. However it is important to note at this point that floor space and workforce are important adjunct enabling factors for Laboratory medicine to support the development of an ECC. Workforce planning and careful estate configuration will be required to allow Laboratory Medicine deal with ancipated growth and new technologies ot support treatment.

It is not clear at this stage what growth in detection and analysis of cancer patients looks like, but it is clear that any further work that is sent to laboratory medicine will require investment otherwise this will become a rate-limiting step in the ability of the ECC to function.

The ideal solution is the CLiFS building. If this is not feasible then planning should start now for alternative solutions with Lothian. NHS Lothian Laboratory Medicine is already a major service

probvider for Borders and Fife Lab analysis as a teriary centre which makes any increase across the whole system a more pressing problem to solve.

Challenges

- Transport across the city
- Staffing for potential activity increases
- Recruitment to some specialist roles (currently a national shortage of Histopathologists)
- Pressure from potential of increased screening – increasing uptake rates and introduction of new screening programmes

Nuclear Medicine Physics

Re-provision of the ECC provides an opportunity to create specifically designed in- and outpatient treatment facilities for the administration of radioactive therapies for cancer patients. These administrations are performed by the Nuclear Medicine Physics (NMP) team. It would be advantageous to co-locate the remainder of the NMP team (including DEXA scanning and radioactivate labs) with Radiology (including standard nuclear medicine imaging and PET) and Radiopharmacy in a supporting hub. This would improve the patient experience and allow efficient utilisation of a specialist staff group.

Existing arrangements

The current NMP service is located in the original Outpatients Building at the WGH; due to the physical condition of the building further radioactive therapies for cancer services cannot be introduced.

The service is part of the pan-Lothian Medical Physics Department who provide services across NHS Lothian. The clinical services provided by the NMP team at WGH include:

- Inpatient radioiodine ablation therapy (^{131}I – thyroid cancer), currently performed on ward 2 (CAU)
- Outpatient radioiodine therapy (^{131}I) for overactive thyroid,
- Castration resistant metastatic prostate cancer therapy (using ^{223}Ra)
- Treatment of myeloproliferative neoplasms such as polycythaemia vera using ^{32}P
- Radioactive Glomerular Filtration Rate (GFR) tests for chemotherapy dosing
- DEXA scanning for bone density

The NMP service also provides the following clinical services at RIE:

- Support and provision of ^{90}Y SIR Spheres for treatment of liver tumours
- Radioactive GFR tests for chemotherapy dosing including paediatric service

Medical Physics Expert (MPE) services are provided to:

- Nuclear imaging departments at WGH, RIE, RHCYP, NHS Fife and Borders
- EIF-QMRI (formally CRIC) to ensure the operation of the NHS PET-CT scanner and two research scanners (PET-CT and PET-MR)
- Various theatres using gamma probes for sentinel lymph node biopsy for the cancer surgeries including breast, penile, vulval, head and neck, and melanoma.

Drivers for Change

The facilities for outpatient therapies do not allow new advanced therapies to be offered. An example of this includes ^{177}Lu for treatment of relapsed non-Hodgkin's lymphoma, neuroendocrine tumours and metastatic castration-resistant prostate cancer. This is in part due to the lack of a dedicated radioactive toilet and waiting area. For outpatient treatments patients can expect to be in the facility from 30 minutes to 6 hours depending on the treatment.

There is only one bed, with the appropriate screening and en-suite facilities, for radioactive therapies. Previously there used to be two inpatient treatment rooms, however neither were fit for purpose and in 2020 space was made available to upgrade and commission one suite – this was opened in 2021.

The current inpatient facilities cannot accommodate MIBG therapy for neuroendocrine tumours.

Having the NMP section co-located next to cancer services and the radiopharmacy would mean that the NMP team would not have to carry radioactive sources across the site. This would reduce staff dose, minimise the potential for an incident, and improve efficiency.

Having nuclear medicine imaging (SPECT-CT and PET) located in the same vicinity as the NMP section would mean that a specialist staff group is in one place, and where needed, resources can be pooled. Radiation labs and source stores could to some extent be shared. These could also be shared with the Radiotherapy sealed source therapies. This gives redundancy and efficiency around specialist equipment such as contamination monitors, calibrators etc.

PET-CT relies on radiotracers produced from a cyclotron. The cyclotron which currently provides tracer to the University of Edinburgh and NHSL is operated by the University of Edinburgh at the Little France site. These tracers often have short half-life and therefore the scanner and cyclotron ideally should be co-located.

A PET-CT service should be located at WGH. PET-CT (or PET-MR) is used for fully staging cancers and prevents overtreatment of advanced disease undetectable by other means, and can be also used for radiotherapy treatment planning purposes.

Future Vision

- Nuclear Medicine Physics Services (including DEXA) in the vicinity of the new ECC, radiopharmacy, radiology including nuclear imaging
- To ensure NHS Lothian patients can benefit from the innovative MRT treatments poised to revolutionise the management of certain cancers we need to ensure we are positioning our clinical service to deliver against the current and future clinical expectations.
- Consideration should be given to efficient patient pathways and service delivery models which would be achieved if all radionuclide services were co-located (i.e. diagnostic nuclear medicine and MRT); workforce, expertise, engineering constraints in relation to radiation shielding, shared laboratory space, dedicated radioactive waste routes and storage.
- Consideration should be afforded to the direction of travel in relation to the availability of PET imaging and radiopharmacy on WGH site? Point 1 will apply again
- Due to the number and increase of novel and emerging advances in MRT it is difficult to predict the ideal service model – however this should be better realised and supported at OBC stage once therapies have been established across the UK.
- PET-CT at WGH
- Cyclotron located at WGH mainly for FDG production etc
- Improved integration with nuclear imaging, cancer service team (particularly for inpatient therapies) and radiopharmacy

Appendix 14: Development of Allied Health Professional services for Cancer

To follow

Appendix 15: Long-listed Options

The long-list of options below was identified and appraised in 2018/19. From this list, option 4 became option A3 in this business case; option 9 became option A5; option 12 became option A6.

Cancer Centre Initial Agreement
Option Appraisal - Long List of Options

Long list of delivery options

09 September 2020 - Rev. 7

Ref.	Option	Option Description	Strengths / Weaknesses: Description	Strength (S) Weakness (W) Improved (I)	Preferred Possible Discounted	Carry to shortlist (yes/no)?
1	Do nothing	Continue with the existing service at WGH and Regionally. This option is no longer possible as the "do minimum option" in terms of the Oncology enabling projects is underway.	Facilities and capacity are not able to cope with projected demand.	W	Discounted	Yes - carry forward to allow comparison. Short-list option 1
			HAI patient safety issues.	W		
			Poor patient experience	W		
			Workforce challenges - recruitment and retention.	W		
			Wide range of cancer therapies.	W		
			Opportunities to participate in a full programme of trials and research.	W		
			Cost (capital/revenue)	S		
2	Do minimum	This option relates to the Oncology enabling projects. Cancer services remain in their existing accommodation with upgrade work completed (Oncology enabling and Haematology projects). These works deal to some degree with building condition and capacity related issues, however the enabling works are viewed as a 10 year max. plan to support cancer treatments until a new cancer centre is ready.	Facilities and capacity are not able to cope with projected demand.	I	Discounted	Yes - carry forward to allow comparison. Shot-list option 2
			HAI patient safety issues.	I		
			Poor patient experience	I		
			Workforce challenges - recruitment and retention.	W		
			Wide range of cancer therapies.	W		
			Opportunities to participate in a full programme of trials and research.	W		
			Cost (capital/revenue)	S		
3	Re-provision: WGH hub and Regional spoke model.	New-build and/or refurbishment at WGH to create a hub. This would in turn allow Regional spokes to be formed helping to balance care between WGH and the Region. This option would decentralise the cancer centre to an extent providing more service within the Region. Potential issues with patient and staff flows. Staff recruitment and retention may be a challenge generally under this option and a international centre of excellence would not be created.	Facilities and capacity are not able to cope with projected demand.	I	Discounted	No
			HAI patient safety issues.	S		
			Poor patient experience	S		
			Workforce challenges - recruitment and retention.	W		
			Wide range of cancer therapies.	W		
			Opportunities to participate in a full programme of trials and research.	W		
			Cost (capital/revenue)	I		
4	Re-provision: new-build at WGH	Current services re-provided at the WGH in a new build facility.	Facilities and capacity are not able to cope with projected demand.	I	Possible	Yes Short-list option 3
			HAI patient safety issues.	S		
			Poor patient experience	S		
			Workforce challenges - recruitment and retention.	I		
			Wide range of cancer therapies.	W		
			Opportunities to participate in a full programme of trials and research.	W		
			Cost (capital/revenue)	I		
5	Re-provision: phased new-build at WGH	Current services re-provided at the WGH in a new build facility. Delivered in a phased manner. Ability to spread investment over a longer timeframe helping cashflow. With inflation, although cashflow will be improved this option will cost more overall compared to option 4. It will however take longer to make the necessary changes and realise the benefits of the investment. There are likely to be site compromises in terms of adjacencies over a longer time period under this option also.	Facilities and capacity are not able to cope with projected demand.	I	Possible	Yes Short-list option 4
			HAI patient safety issues.	S		
			Poor patient experience	S		
			Workforce challenges - recruitment and retention.	I		
			Wide range of cancer therapies.	W		
			Opportunities to participate in a full programme of trials and research.	W		
			Cost (capital/revenue)	I		
6	Re-provision: refurbishment at WGH	Current services re-provided at the WGH in refurbished accommodation. Option is very unlikely to be feasible based on space constraints, site adjacencies and general building condition.	Facilities and capacity are not able to cope with projected demand.	I	Discounted	No
			HAI patient safety issues.	I		
			Poor patient experience	I		
			Workforce challenges - recruitment and retention.	I		
			Wide range of cancer therapies.	W		
			Opportunities to participate in a full programme of trials and research.	W		
			Cost (capital/revenue)	I		
7	Re-provision: part new-build and part refurbishment at WGH.	Current services re-provided at the WGH in a smaller new-build and refurbished accommodation. This could include retaining some facilities - i.e. radiotherapy. More feasible than option 6, however site adjacencies and compromises over space standards and building condition would still exist.	Facilities and capacity are not able to cope with projected demand.	I	Discounted	No
			HAI patient safety issues.	I		
			Poor patient experience	I		
			Workforce challenges - recruitment and retention.	I		
			Wide range of cancer therapies.	W		
			Opportunities to participate in a full programme of trials and research.	W		
			Cost (capital/revenue)	I		

8	Re-provision: new-build facilities at another site (in Edinburgh, Lothians or Regionally).	Current services re-provided at another site in Edinburgh/Lothians/Regionally. Availability of appropriate sites are likely to be limited. Land purchase may also be a factor. As other non cancer related services would remain at the WGH this option has the potential to disrupt patient and staff flows/efficiencies. In addition this option is not aligned with NHS Lothian's Clinical Strategy which commits to the long-term future of the WGH site.	Facilities and capacity are not able to cope with projected demand.	I	Possible	No
			HAI patient safety issues.	$		
			Poor patient experience	$		
			Workforce challenges - recruitment and retention.	VW		
			Wide range of cancer therapies.	VW		
			Opportunities to participate in a full programme of trials and research.	W		
			Cost (capital/revenue)	I		
9	Re-Provision and enhancement of the Cancer Centre: new-build facilities at WGH.	Enhanced new-build facilities at WGH helping to achieve all of the needs for change. The disadvantages with this option are cost and the lack of Regional synergy.	Facilities and capacity are not able to cope with projected demand.	$	Possible	Yes Short-list option 5
			HAI patient safety issues.	$		
			Poor patient experience	$		
			Workforce challenges - recruitment and retention.	$		
			Wide range of cancer therapies.	$		
			Opportunities to participate in a full programme of trials and research.	$		
			Cost (capital/revenue)	VW		
10	Re-Provision and enhancement of the Cancer Centre: enhanced new-build facilities at another site (in Edinburgh, Lothians or Regionally).	Enhanced new-build facilities at an alternate site helping to achieve all of the needs for change. The disadvantages with this option are cost and lack of Regional synergy. There is also potentially workforce challenges with this option. In addition NHS Lothian have committed to cancer services at the WGH site over the longer-term within their clinical strategy. As other non cancer related services would remain at the WGH this option has the potential to disrupt patient and staff flows/efficiencies and the viability of the site longer term.	Facilities and capacity are not able to cope with projected demand.	$	Possible	No
			HAI patient safety issues.	$		
			Poor patient experience	$		
			Workforce challenges - recruitment and retention.	VW		
			Wide range of cancer therapies.	$		
			Opportunities to participate in a full programme of trials and research.	$		
			Cost (capital/revenue)	VW		
11	Re-Provision and enhancement of the Cancer Centre: enhanced new-build hub at WGH with Regional spokes.	Enhanced new-build facilities at WGH with an appropriate balance of care shifting to Regional spokes. This option would decentralise the cancer centre to an extent providing more services within the Region. Potential issues with patient and staff flows. Staff recruitment and retention may be a challenge generally under this option and a international centre of excellence would not be created.	Facilities and capacity are not able to cope with projected demand.	$	Possible	No
			HAI patient safety issues.	$		
			Poor patient experience	$		
			Workforce challenges - recruitment and retention.	VW		
			Wide range of cancer therapies.	$		
			Opportunities to participate in a full programme of trials and research.	$		
			Cost (capital/revenue)	VW		
12	Re-Provision and enhancement of the Cancer Centre: Re-provision at WGH + Regional satellite / outreach facilities	Enhanced new-build facilities at the WGH with Regional satellite and outreach facilities. This option helps to achieve all the needs for change creating a core centre of excellence at the WGH whilst establishing appropriate local facilities, helping to treat people locally as far as practical. The disadvantages of this option are cost and potential workforce issues in managing Regional requirements.	Facilities and capacity are not able to cope with projected demand.	$	Preferred	Yes Short-list option 6
			HAI patient safety issues.	$		
			Poor patient experience	$		
			Workforce challenges - recruitment and retention.	I		
			Wide range of cancer therapies.	$		
			Opportunities to participate in a full programme of trials and research.	$		
			Cost (capital/revenue)	W		
13	Re-Provision and enhancement of the Cancer Centre: at another site (in Edinburgh, Lothians or Regionally) + Regional satellite / outreach facilities	Enhanced new-build facilities at another site (in Edinburgh, Lothians or Regionally) + Regional satellite / outreach facilities. This option is similar to option 12, however site availability/cost could be potential issues. Workforce challenges are likely to be greater for this option especially if the core centre is out with Edinburgh. As with other options that look at moving off the WGH site, this goes against NHS Lothian's clinical strategy and is likely to stagnate the WGH site over the longer term.	Facilities and capacity are not able to cope with projected demand.	$	Possible	No
			HAI patient safety issues.	$		
			Poor patient experience	$		
			Workforce challenges - recruitment and retention.	I		
			Wide range of cancer therapies.	$		
			Opportunities to participate in a full programme of trials and research.	$		
			Cost (capital/revenue)	W		
14	Re-Provision and enhancement of the Cancer Centre: Regional approach	This option would have less reliance on a dominant central hub and service would be distributed via key hubs Regionally. Potential issues with staff and patient flows in respect to this option. Likely to be less efficient having a series of hubs. The loss of a core cancer centre reduces the likelihood of achieving an international centre of excellence and the benefits of staff recruitment that this would facilitate.	Facilities and capacity are not able to cope with projected demand.	$	Possible	No
			HAI patient safety issues.	$		
			Poor patient experience	$		
			Workforce challenges - recruitment and retention.	W		
			Wide range of cancer therapies.	$		
			Opportunities to participate in a full programme of trials and research.	$		
			Cost (capital/revenue)	W		

Appendix 16: Short-listed options mapped against services

This exercise was carried out in 2019 in order to provide a better understanding of the differences been the shortlisted options: a schedule of services was created and mapped against options.
From this list, these are options A1 through A6, although A2 has since been discounted, as described in the Initial Agreement.

Cancer Centre Initial Agreement
Option Appraisal - Long List of Options

Long list of services filtered into short list of delivery options

17 July 2020 - Rev. 4

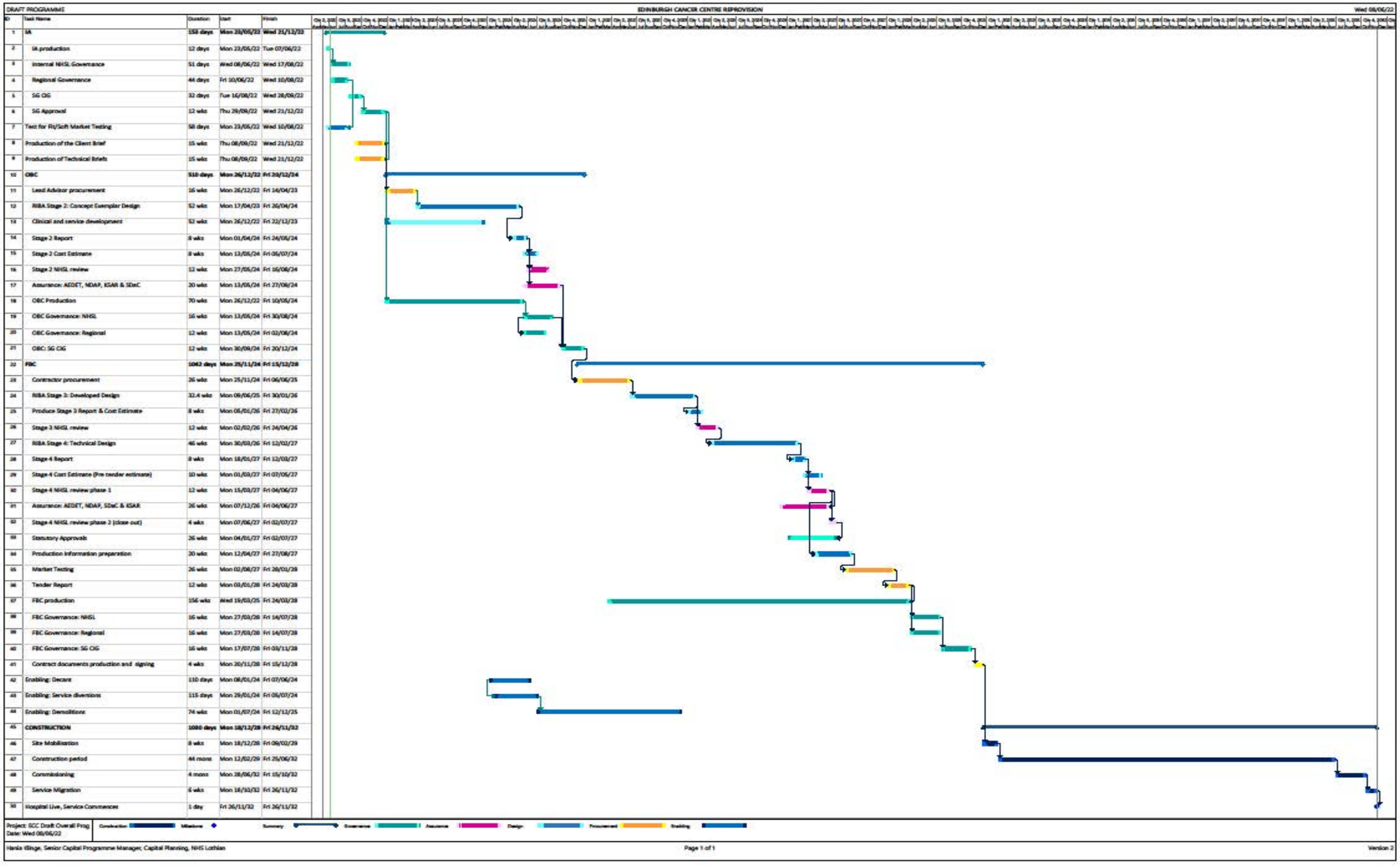
Key: Preferred / Possible / Discounted / NA

							Option 1			Option 2			Option 3					Option 4					Option 5					Option 6				
	Services Solutions					Short listed Options for Assessment	Do nothing			Do Minimum			Re-provision, cancer new-build					As option 3 but phased					Re-provision and enhancement					Re-provision and enhancement + regional				
Services	Cancer Centre (new build)	New build adjacent to CC	Wider WGH Campus	Satellite	Regional	Feasibility / notes	WGH	Satellite	Regional	Wider WGH Campus	Satellite	Regional	Cancer Centre (new build)	New build adjacent to CC	Wider WGH Campus	Satellite	Regional	Cancer Centre (new build)	New build adjacent to CC	Wider WGH Campus	Satellite	Regional	Cancer Centre (new build)	New build adjacent to CC	Wider WGH Campus	Satellite	Regional	Cancer Centre (new build)	New build adjacent to CC	Wider WGH Campus	Satellite	Regional
Main Entrance						Required only if New Build Cancer Centre is provided							✓					✓					✓					✓				
Wellness Centre																																
Benefits Advice						Dedicated service for the new Cancer Centre. Could be provided in another new adjacent building or via the retained estate if required (not preferred).	✓			✓			✓					✓					✓					✓				✓
Coffee Lounge						As above.	✓			✓													✓					✓				✓
Holistic and Complementary Therapies						As above.	✓			✓													✓					✓				✓
Training "Living With and Beyond Cancer"						As above.	✓			✓													✓					✓				✓
Counselling						As above.	✓			✓			✓					✓					✓					✓				✓
Training & Education Centre																							✓					✓				
Admissions/ Cancer Assessment																																
CAU (trolleys & short stay)						A dedicated service for the new cancer centre.	✓			✓			✓					✓					✓					✓				
Enhanced Supportive Care Clinic						A dedicated service for the new cancer centre.																	✓					✓				
Cancer Treatment Helpline/Booking Hub						Currently provided national service that would continue to be provided within a new cancer centre.	✓			✓			✓					✓					✓					✓				
Companion Accommodation						Replacing Pentland lodge accommodation in Options 3 & 4 - may be located within WGH site or nearby. Includes immediately adjacent relatives accommodation within CAU and 'aparthotel' accommodation within Options 5 & 6. Aparthotel - see "Overnight & Support" for regional patients below.	✓			✓			✓	✓	✓			✓	✓	✓			✓					✓				
Chemotherapy Day Case						New Cancer Centre with an NHS Lothian satellite facilities is the preference. There may also be opportunities for expansion of Regional capacity however these would require to be scoped out in detail to ensure efficient patient flows and sustainable staffing models could be provided without any negative impact on the ambition for the centre and specialist staff recruitment/retention.	✓	✓	✓	✓	✓	✓	✓					✓					✓			✓		✓			✓		
Haematology including Day Case						As above.	✓	✓	✓	✓	✓	✓	✓					✓					✓					✓				
Radiotherapy Department (including Brachytherapy)						New Cancer Centre is the preference. There may also be opportunities for satellite facilities (in Lothian or in Region) however these would require to be scoped out in detail to ensure efficient patient flows and sustainable staffing models could be provided without any negative impact on the ambition for the centre and specialist staff recruitment/retention.	✓			✓			✓					✓					✓					✓				
Radiopharmacy						Radiopharmacy is currently provided at RIE however 60% of medicines produced come to WGH								✓					✓					✓					✓				
Outpatient department						The preference is for Cancer Centre provision and Regional clinics offering access to outpatient services throughout the Region. There are alternative possible options as noted, however these are not preferred. All OP facilities to be designed flexibly to allow for use of technology, remote clinics etc.	✓	✓	✓	✓	✓	✓	✓			✓		✓				✓	✓				✓					✓				✓
Supportive Therapies Facilities						The preference is for Cancer Centre provision and Regional capacity offering access to Supportive Therapies throughout the Region.	✓	✓	✓	✓	✓	✓	✓			✓		✓				✓	✓				✓					✓				✓
HEBA Clinic						It is considered that this service would be provided as part of the outpatient capacity within the new Cancer Centre	✓			✓			✓					✓					✓					✓				

	Services Solutions						Option 1			Option 2			Option 3					Option 4					Option 5					Option 6				
							Do nothing			Do Minimum			Re-provision, cancer new-build					As option 3 but phased					Re-provision and enhancement					Re-provision and enhancement + regional				
Services	Cancer Centre (new build)	New build adjacent to CC	Wider WGH Campus	Satellite	Regional	Short listed Options for Assessment Feasibility / notes	WGH	Satellite	Regional	Wider WGH Campus	Satellite	Regional	Cancer Centre (new build)	New build adjacent to CC	Wider WGH Campus	Satellite	Regional	Cancer Centre (new build)	New build adjacent to CC	Wider WGH Campus	Satellite	Regional	Cancer Centre (new build)	New build adjacent to CC	Wider WGH Campus	Satellite	Regional	Cancer Centre (new build)	New build adjacent to CC	Wider WGH Campus	Satellite	Regional
Pharmacy (ECC provision)						Pharmacy facility will be provided to current design standards and integral to any new build options. Note that New build adjacent to ECC or the wider WGH campus would require good immediate links and adjacencies to ECC, particularly for SACT delivery.	✓			✓			✓					✓					✓									✓				
Pharmacy - Combined site facility						Pharmacy requires good adjacencies to the Cancer Centre and the rest of the WGH site. The preference is for this service to be delivered via a new single fully integrated facility at WGH combining pharmacy services for the cancer centre and the wider site. Other options are available as noted however these are not preferred. Note Option 2 "Do Miniumum" - area available for Pharmacy Services is compromised.	✓			✓			✓					✓					✓	✓				✓	✓							
Inpatient beds																																
Acute Oncology Inpatient Beds						New Cancer Centre is the preference. There may also be opportunities for specific Oncology/Haematology capacity in the region, however this requires to be scoped out in detail to fully understand current arrangements and ensure efficient patient flows and sustainable staffing models could be provided without any negative impact on the ambition for the centre and specialist staff recruitment/retention.	✓			✓			✓					✓					✓					✓								
Breast Surgical Inpatient Beds						The only IP beds provided regionally are for Breast Surgery patients. All other Onc and Haem patients are managed within general wards.	✓	✓	✓	✓	✓	✓	✓					✓					✓					✓							
Acute Haematology Inpatient Beds						As above.	✓			✓			✓					✓					✓					✓				
Clinical Trials Inpatient Beds						As above.	✓			✓			✓					✓					✓					✓				
Teenage Cancer Trust (TCT)																																
Teenage and Young Adult Inpatient Beds						The only IP beds provided regionally are for Breast Surgery patients. All other Onc and Haem patients are managed within general wards.	✓			✓			✓					✓					✓					✓							
Teenage and Young Adult Services						New Cancer Centre is the preference.	✓			✓			✓					✓					✓					✓				
Breast services:																																
Breast screening & Mammography						The preference is for co-location of the Screening Centre with the new Cancer Centre due to efficiencies in equipment use and staff utilisation. Mobile screening would continue to offer access to patients throughout Lothian and the South East Region.	✓	✓	✓	✓	✓	✓				✓	✓				✓	✓				✓	✓				✓	✓				✓	✓
Breast Clinics & Consultant Offices						New Cancer Centre is the preference. Wider WGH campus is a possibility via a refurb option however optimum flows and adjacencies may be compromised. Some outpatient services are already offered regionally, there may also be opportunities for additional regional capacity, however these would require to be scoped out in detail. All OP facilities to be designed flexibly to allow for use of technology, remote clinics etc	✓	✓	✓	✓	✓	✓	✓					✓					✓					✓								
Breast Theatres						As above.	✓	✓	✓	✓	✓	✓	✓					✓					✓					✓				
Breast Daybed Unit						New Cancer Centre is the preference. Breast Surgery is also carried out regionally at the moment however specialist procedures come to WGH - assumption is this arrangement would continue in the future.	✓	✓	✓	✓	✓	✓	✓					✓					✓					✓							
SESCRN						New Cancer Centre is the preference. There may also be opportunities for Regional research and trials capacity, however these would require to be scoped out in detail to ensure efficient patient flows and sustainable staffing models could be provided without any negative impact on the ambition for the centre and specialist staff recruitment/retention.	✓			✓			✓					✓					✓					✓								
Admin & Support																																
Offices - Administrative/management (Agile working)						Dedicated to a new Cancer Centre. Could be provided in another new adjacent building or via the retained estate if required (not preferred).	✓			✓			✓					✓					✓					✓							
Offices - Clinical (Agile working)						As above.	✓			✓			✓					✓					✓					✓				
Seminar rooms						As above.	✓			✓			✓					✓					✓					✓				
Macmillan																																
Palliative Care						This relates to office space only and the preference is for this service to be provided via the new Cancer Centre and in the Region. The service could be provided via the retained estate at the WGH if required.	✓			✓			✓					✓					✓					✓				✓				
Staff Welfare Hubs																																
Changing facilities &WCs						Dedicated to a new Cancer Centre. Could be provided in another new adjacent building or via the retained estate if required (not preferred).	✓			✓			✓					✓					✓					✓							
Staff Restrooms						As above.	✓			✓			✓					✓					✓					✓				
FM Hub						Site wide strategies indicate that with the proximity to the Clock Tower, FM services associated with the Cancer centre should be integated in a new build option.							✓					✓					✓					✓				
Data Centre						IT Strategy indicates requirement for suitable facility within new build options.																											

	Services Solutions						Option 1			Option 2			Option 3					Option 4					Option 5					Option 6				
							Do nothing			Do Minimum			Re-provision, cancer new-build					As option 3 but phased					Re-provision and enhancement					Re-provision and enhancement + regional				
Services	Cancer Centre (new build)	New build adjacent to CC	Wider WGH Campus	Satellite	Regional	Short listed Options for Assessment Feasibility / notes	WGH	Satellite	Regional	Wider WGH Campus	Satellite	Regional	Cancer Centre (new build)	New build adjacent to CC	Wider WGH Campus	Satellite	Regional	Cancer Centre (new build)	New build adjacent to CC	Wider WGH Campus	Satellite	Regional	Cancer Centre (new build)	New build adjacent to CC	Wider WGH Campus	Satellite	Regional	Cancer Centre (new build)	New build adjacent to CC	Wider WGH Campus	Satellite	Regional
Overnight and Support Accommodation																															
Regional Patient						Flexible opportunities for provision of this service. Preferred model "Aparthotel" concept.	✓			✓			✓					✓					✓					✓				
Communal Day Room						As above.	✓			✓			✓					✓					✓					✓				
Other Support Accommodation, including site wide essential services & Rapid Diagnostic Centre Model																															
Rapid Diagnostic Centre						Site wide services to be provided from retained estate and new accommodation in conjunction with new ECC.	✓			✓			✓	✓	✓			✓	✓	✓			✓	✓	✓			✓	✓	✓		
Labs						As above.	✓			✓														✓					✓			
Critical Care						Requires good adjacencies to the Cancer Centre and the rest of the WGH site therefore the preference is for this service to be delivered via a new adjacent facility at the WGH. Other options are available as noted however these are not preferred.	✓			✓														✓					✓			✓
Imaging						An imaging Centre requires good adjacencies to the Cancer Centre and the rest of the WGH site. The preference is for this service to be delivered via a new adjacent facility at the WGH. Other options are available as noted however these are not preferred.	✓			✓														✓					✓				
AHP						AHP services requires good adjacencies to the Cancer Centre, however do not necessarily require to be located within the Cancer Centre. The preference is for this service to be delivered via a new adjacent facility at the WGH. Other options are available as noted however these are not preferred. Opportunities to provided rehabilitation services within the "Ward Support Clusters" multi-purpose room, and in the development of the brief for the Wellness Centre.	✓			✓		✓				✓					✓			✓			✓			✓		✓			✓
Social Work						As above.	✓			✓		✓				✓					✓			✓			✓		✓			✓
Nursery						This facility is not currently provided, but would complement the overall Cancer Centre offering. It could be provided in new facilities, however as its not essential the preference is for the retained estate to be used.																			✓						✓		
Gym						As above.																			✓					✓		

Appendix 17: Project Programme



Appendix 18: Schedule of Accommodation

Background

A Draft Schedule of Accommodation for the proposed new Edinburgh Cancer Centre was first developed in 2015 to inform work being progressed on the Western General Hospital Site Masterplan. This scheduling was based on the re-provision of existing facilities to meet current design and technical guidance, with uplift to meet projected increased activity where that information was available – SACT and Radiotherapy principally.

From May 2019 this scheduling was more robustly developed in conjunction with more detailed work being undertaken around the shortlisted options for re-provision included in the 2020- Initial Agreement.

The development initially used the NHS Lothian data available for each clinical area alongside clinical input and incorporated briefings previously developed for the Oncology Enabling and Haematology capital projects to inform numbers of clinical treatment areas: Inpatient Beds, SACT & Haematology Chairs, Outpatient consulting rooms etc.

Healthcare Planner Input

Up to and including the 2020 Initial Agreement independent healthcare planning advice was sought through the appointed Lead Advisor team, who reviewed the emerging brief, data collation and analysis, and held stakeholder meetings to inform the refinement of the Schedule of Accommodation and early adjacency discussions.

In 2021, NHS Lothian appointed healthcare planners to carry out a regional service model review, to test and refresh the outputs from the 2020 IA and revisit the requirements for accommodation in ECC. These planners have conducted a high level review of the earlier Schedule of Accommodation, which forms the basis of the capital costs for this Initial Agreement now.

Outputs

The Schedule of Accommodation and associated adjustments for decentralised radiotherapy has been used as the basis for the high level costings included in this Initial Agreement. It has been developed in line with the clinical model, in so far as it has been described, to ensure that space is designated to support relevant functional requirements.

Updates and consistency checks were carried out in April 2022, including:

a) Updated room sizes based on latest guidance
b) Adjustment to circulation allowances based on experience from recent projects
c) Increased distributed Plant allowance from 20% to 30%, based updated guidance and on experience elsewhere of net zero carbon
d) Communication allowance increased from 10% to 15% based on experience from recent projects
e) General consistency checking

Service models and related accommodation requirements that have not been updated from the 2020 IA except for consistency checking as above, will be addressed in development of the OBC. Therefore, the 2020 SOA remains as it was for:

f) Mammography and breast screening
g) Third sector partners
h) Main entrances and public / staff amenities
i) Facilities management spaces – dependent on FM and logistics planning
j) Office and admin accommodation.

	2022 Based on service model review outputs		2020 IA for comparison	
Department	**Net Area/ 'Functional Area'**	**Gross Department Area**	**Gross Department Area**	**Assumptions / Actions**
Main Entrance	766	1,069	973	To be reviewed and updated at OBC stage
Training/Education	140	196	196	To be reviewed and updated at OBC stage
Cancer Assessment Unit	592	845	735	4 chairs and 10 beds
Chemotherapy Day	1,399	1,954	1,527	Does not include digital optimisation of waiting
Haem Day Case	665	929	927	
Radiotherapy	5,343	7,462	6,788	10 linacs and 1 fallow bunker (2020 was 9 + 1)
Out-patients	927	1,324	1,022	Includes digital optimisation of waiting
WGH Integrated Pharmacy	1,541	2,163	1,670	To be reviewed and updated at OBC stage
Inpatients - "generic" wards	3,506	5,080	4,366	116 beds over 4 wards (including TCT beds)
TCT additional support space	186	270	270	To be reviewed and updated at OBC stage
Ward support clusters	434	620	458	2 clusters between 4 wards
Mammography & Breast Screening	1,253	1,790	1,790	To be reviewed and updated at OBC stage
Breast Clinics & Consultant Offices	792	1,130	1,170	
Theatres	1,109	1,548	1,516	2 for breast surgery, 1 brachytherapy +
SES SCRN	782	1,092	1,579	
Admin and support	650	874	874	To be reviewed and updated at OBC stage
Macmillan	62	86	86	To be reviewed and updated at OBC stage
Palliative Care	39	54	51	To be reviewed and updated at OBC stage
Staff Welfare Hubs	1,571	2,111	2,111	To be reviewed and updated at OBC stage
FM Hub	471	632	632	To be reviewed and updated at OBC stage
Data Centre	197	282	282	To be reviewed and updated at OBC stage
Sub-total	22,423	**31,510**	**29,293**	
Distributed plant @ 30%		9,453	5,859	

Sub total		40,963	35,151	
Communication @ 15%		6,144	3,515	
Total		**47,107**	**38,666**	

Next Steps post IA approval

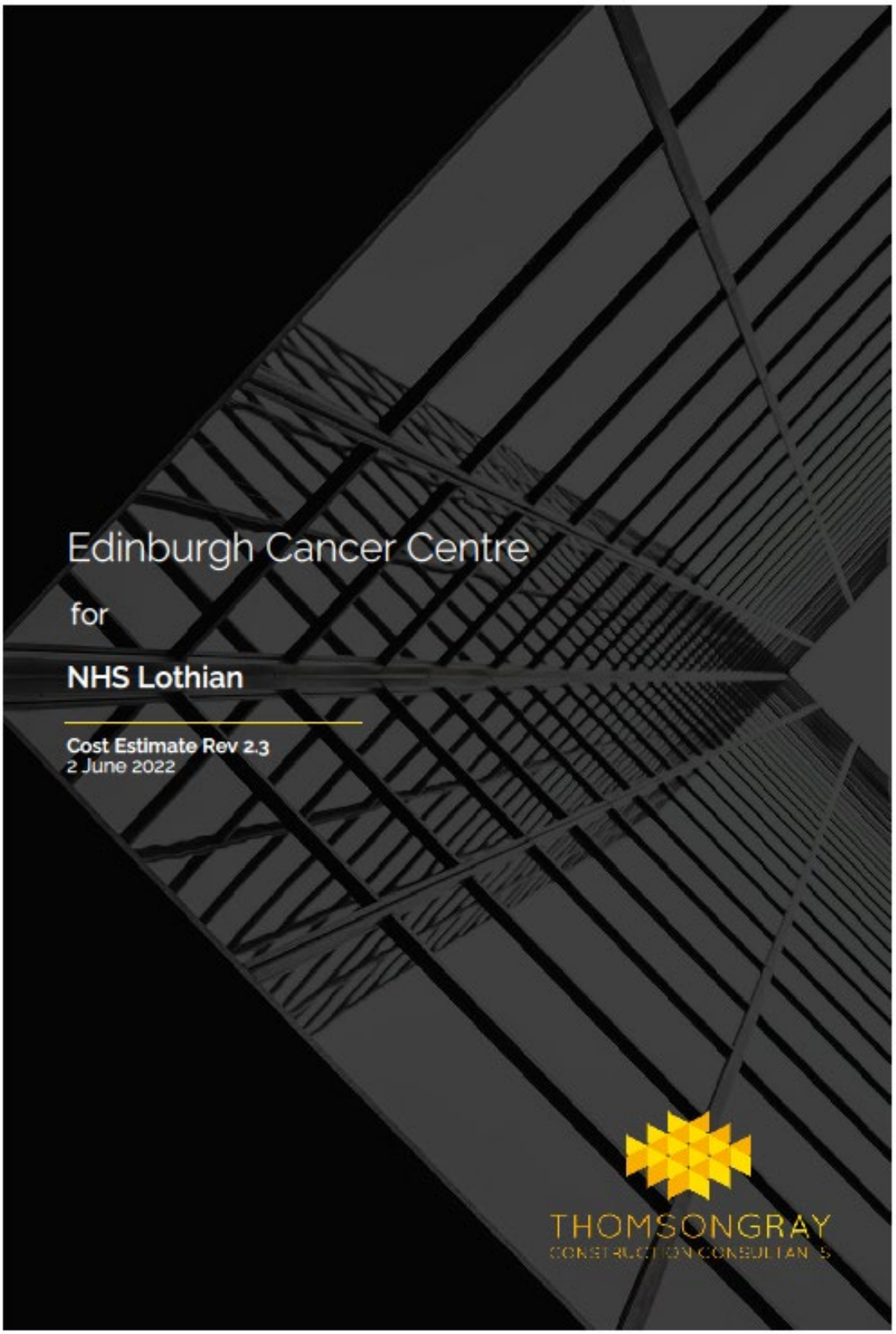
The further development of the Schedule of Accommodation will be dependent on a more detailed clinical briefing process including;

- Full review of activity data and area requirements with clinical teams alongside a healthcare planner and design team;
- Multi service co-ordination to identify where efficiencies can be realised in the sharing of common support and administration areas;
- Technological research for Pharmacy and Radiotherapy services in particular;
- Refinement of the proposed inpatient model through articulation if future service models;
- Refinement of future staff models for wellness, administration and other supporting accommodation;
- Horizon scanning to refine future services, for example the development of a Rapid Diagnostic Service and Cellular Therapies Unit.
- Further refinement of Training/Education Centre provision;
- Further definition of the other support required on the WGH site including; café and social support areas for staff rest/wellbeing, patient and relative accommodation, and provision for Third Sector support services.
- More detailed FM and Engineering inputs.

A key part of the masterplan is to balance the requirements of the site as a whole while providing the most cancer dependent services and facilities within the proposed new Edinburgh Cancer Centre brief.

Diagnostic services will require to be reviewed for masterplanning, as a key dependency of this reprovision of cancer services, whilst being out of scope for the ECC. These include diagnostic radiology (except for breast screening), laboratories and nuclear medicine physics.

Appendix 19: Cost Estimate Report



Contents

Prepared by: AR / RL

Checked by: JSG

Date: 24.05.22

1.0 Introduction

1.1 The following cost has been prepared to assess the likely construction cost of providing a new Edinburgh Cancer Centre on the Western General Site at Western General Hospital in Edinburgh. Section 3.0 of this cost option appraisal contains a summary of costs, with a more detailed cost breakdown contained within sections 4.0 and 5.0 for each Option. These costs are provided to support the Initial Agreement being prepared by NHS Lothian.

1.2 Costs relate to the provision of the Cancer Centre only at this stage and specifically excludes any enabling or infrastructure work such as services upgrades, demolitions, roads, footpaths, public realm, carparking etc. These are currently being developed through the Programme Masterplan.

1.3 Cost Option 2 includes for a satellite linear accelerator facility, off site, based on a facility similar to Lanarkshire Beatson.

1.4 The estimate is based on the schedule of accommodation dated 06/04/2022 v0.6, prepared by Buchan & Associates

1.5 A list of assumptions and exclusions are contained within Section 5.0

Due to the fluidity of the construction market, unknown design risk and construction risk, a range of costs have been provided. We have categorised this as low, medium and high. Whilst the base costs remain the same, adjustments to risk allowances are included.

2.0 Key Facts

Client	NHS Lothian Waverly Gate 2-4 Waterloo Place Edinburgh EH1 3EG	**Status of Estimate**	**Feasibility Option Appraisal**
		Base Date	**1st Quarter 2022**
Lead Advisor	Thomson Gray Prospect House 5 Thistle Street Edinburgh EH2 1DF		
Basis of Estimate	NHSL ECC SOA IA Draft v0.6 dated 08.04.22 and prepared by Buchan & Associates		
Optimism bias	37.3% (Short Listed Option 5)		
Programme	44 months construction with a start date Q1 2029 and completion Q2 2032		
Inflation	BCIS TPI - Calculated to the mid-point of construction Q3 2030 (forecast index of 523)		
Procurement	Two stage procurement route - capital funded		
Preliminaries	Refer to benchmarks (pro-rata)		
Design risk	Allowance of 8% of construction costs		
OH&P	Allowance of 7.5% of construction costs		
Cost range	+/- 5% of to provide a possible low and high risk cost range		
Sustainability	Sustainability Uplift - Net Zero Carbon - details not available therefore cost uplift percentage included at 15% and added to benchmarking		

3.0 Cost Summary

Summary of Costs		Option 1		Option 2
Construction	£	352,610,057	£	368,456,276
Professional and NHS Project Team Fees	£	28,208,805	£	29,476,502
Other costs - surveys / IT / domestics / estates	£	7,616,377	£	7,958,656
Equipment - Group 2+3 client direct	£	58,265,286	£	60,883,715
Inflation	£	222,194,477	£	232,179,849
Optimism Bias	£	249,497,835	£	260,710,214
VAT	£	183,678,567	£	191,933,042
	£	1,102,071,404	£	1,151,598,254
TOTAL	**£**	**1,100,000,000**	**£**	**1,160,000,000**
LOW RANGE	**£**	**1,045,000,000**	**£**	**1,082,500,000**
HIGH RANGE	**£**	**1,155,000,000**	**£**	**1,207,500,000**

THOMSONGRAY
CONSTRUCTION COST CONSULTANTS

Elemental Summary

Edinburgh Cancer Centre - Feasibility Estimate

2 June 2022

4.0 COST ESTIMATE OPTION 1

Element	Quantity	Unit	Rate	Total (£)
Acute hospital accommodation	22,028	m2	5,255.00	115,757,140
Pharmacy accommodation	3,233	m2	4,905.00	15,857,865
Cancer / Oncology accommodation	19,405	m2	6,000.00	116,430,000
Enhanced Acute Services (Theatres etc)	2,314	m2	5,500.00	12,727,000
Internal refurbishment and connections (allow 2,000m2)		m2		8,000,000
Design Risk	8%	Item		21,501,760
Design fees including pre construction	13%	Item		37,735,590
OH&P	7.5%	Item		24,600,702
Sub-Total				**362,810,057**
Add On Costs				
Professional and NHS Project Team Fees	8%	Item		28,208,805
Other costs - surveys / IT / domestics / estates	2%	Item		7,616,377
Equipment - Group 2+3 client direct	15%	Item		58,265,286
Inflation [1Q22 base date (349) to 3Q2030 (523)]	49.74%	Item		222,194,477
Optimism Bias	37.30%	Item		249,497,835
SUB TOTAL				**918,382,837**
VAT	20.00%	Item		183,678,567
CAPEX				**1,102,071,404**
SAY				**1,100,000,000**
GIFA	46,980	m^2		
Construction Rate /m2			£	7,506 /m^2
Development Rate /m2			£	23,414 /m^2

Page 6

THOMSONGRAY
CONSTRUCTION CONSULTANTS

5.0 COST ESTIMATE OPTION 2

Element	Quantity	Unit	Rate	Total (£)
Acute hospital accommodation	22,028	m2	5,255.00	115,757,140
Pharmacy accommodation	3,233	m2	4,905.00	15,857,865
Cancer / Oncology accommodation	18,733	m2	6,000.00	112,398,000
Enhanced Acute Services (Theatres etc)	2,314	m2	5,500.00	12,727,000
Internal refurbishment and connections (allow 2,000m2)		m2		8,000,000
Add Satellite unit	3,085	m2	5,640.00	17,399,400
Design Risk	8%	Item		21,179,200
Design fees including pre construction	13%	Item		39,431,419
OH&P	7.5%	Item		25,706,252
Sub-Total				**368,456,278**
Add On Costs				
Professional and NHS Project Team Fees	8%	Item		29,476,502
Other costs - surveys / IT / domestics / estates	2%	Item		7,958,656
Equipment - Group 2+3 client direct	15%	Item		60,883,715
Inflation [1Q22 base date (349) to 3Q2030 (523)]	49.74%	Item		232,179,849
Optimism Bias	37.30%	Item		260,710,214
SUB TOTAL				**859,886,212**
VAT	20.00%	Item		191,933,042
CAPEX				**1,161,588,264**
SAY				**1,160,000,000**

GIFA	49,393	m^2		
Construction Rate /m2			£	7,460 /m^2
Development Rate /m2			£	23,283 /m^2

6.0 Assumptions and Exclusions

Description

Assumptions

The SOA has been categorised into Acute, Oncology, pharmacy to enable appropriate rates to be applied based on benchmarked projects adjusted for inflation and location to Q1 2022.
Design fees calculated at 13% (this includes pre construction contractor involvement)
Professional and project team fees calculated at 8% (3% NHS direct and 5% PM, CA, Technical / Clerk of works)
Other costs - surveys / IT etc 2% allowance included
Equipment - allowance of 15% based on SCIM guidance for acute facilities
SOA to be referred to for % allowances included for plant, engineering and circulation
SOA scheduling risks were discussed and included within the Optimism Bias calculations / workshop
2000m2 of additional refurbishment included for alterations associated with connections to existing WGH buildings
VAT included at 20%
The optimism bias calculation has been based on Option 5 of the Edinburgh Cancer Centre appraisal
Satellite facility in Option 2 is based on Lanarkshire Beatson. A reduction in the WGH GIFA of 672m2 is included.

Exclusions

Land purchase costs
Decant costs
Life cycle / FM costs
Finance charges
Legal fees
Car parking and WGH road infrastructure upgrades beyond notes below
Site wide energy and non energy infrastructure
Site masterplan items such as Labs / pharmacy / imaging
DCN demolition costs
De-commissioning existing ECC on WGH site
VAT recovery
Charitable works / donations and contributions

Notes

External works and road realignment included for the site area only; this equates to a net construction prime cost of approx. £5m
Risk contingencies included as follows:
Inflation based on programme 44 months construction with a start date Q1 2029 and completion Q2 2032
Uplift for zero carbon included at 15% - criteria / guidelines to be confirmed
Optimism Bias allowed 37.3% as per ECC Option 5
contractor / design risk contingency included at 8%

THOMSONGRAY
CONSTRUCTION CONSULTANTS

7.0 Benchmarking

ACUTE BENCHMARKING

PROJECT DESCRIPTIONS								
BENCHMARK PROJECTS - Adjusted for Inflation to Q1 2022	Migdale Hospital	The Royal Victoria Building, Western General, Edinburgh	New Emergency Care Centre @ Aberdeen Royal Infirmary	Baird Family Hospital (Part of the Baird and Anchor Project)	Golden Jubilee Phase 1	The Dewar Centre - Inverness Elective Care Centre	Renal Dialysis Unit, Western General Hospital, Edinburgh	AVERAGE
Tender Date	3Q 2010	3Q 2011	1Q 2011	4Q 2019	4Q 2018	4Q 2019	4Q 2019	
Key Specification Issues	2 Storey community hospital	3 Storey Hospital for care of the elderly	8 storey emergency care centre	Family hospital	Elective care centre	Elective care centre	New 2 storey renal department	
EE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Co ntr	Frameworks Scotland 1	Frameworks Scotland 1	Frameworks Scotland 1	Frameworks Scotland 2	Frameworks Scotland 2	Frameworks Scotland 3	Frameworks Scotland 3	
Area (m2)	2,095	11,710	30,837	35,920	2,850	8,200	899	
Excavation and Earthworks	£0	£0	£0	£0	£0	£0	£0	£0
Piling	£0	£0	£0	£0	£0	£0	£0	£0
Concrete Work	£0	£0	£0	£0	£0	£0	£0	£0
Brickwork & Blockwork	£0	£0	£0	£0	£0	£0	£0	£0
Substructure	£577	£582	£547	£572	£568	£444	£627	£564
Frame	£81	£476	£481	£824	£189	£963	£176	£424
Upper Floors	£43	£0	£0	£90	£0	£0	£44	£25
Roof	£129	£59	£83	£81	£210	£0	£107	£95
Stairs & Balustrades	£16	£12	£12	£47	£14	£0	£26	£18
External Walls	£261	£245	£176	£425	£242	£0	£670	£288
Windows & External Doors	£0	£0	£0	£1	£75	£0	£22	£14
Internal Walls & Partitions	£272	£139	£182	£335	£259	£0	£103	£184
Internal Doors	£147	£133	£145	£101	£143	£0	£79	£107
Superstructure	£930	£1,062	£1,080	£1,894	£1,133	£963	£1,227	£1,184
Wall Finishes	£148	£56	£115	£73	£80	£180	£73	£103
Floor Finishes	£95	£59	£79	£62	£66	£0	£68	£62
Ceiling Finishes	£75	£55	£65	£139	£47	£0	£36	£60
Painting and Decorating	£0	£0	£0	£0	£0	£0	£0	£0
Finishes	£318	£170	£259	£273	£194	£180	£178	£225
FF&E	£141	£56	£132	£135	£60	£82	£135	£106
Sanitary Appliances	£66	£0	£61	£33	£0	£0	£37	£28
M&E Installations	£1,376	£1,509	£1,685	£1,965	£1,290	£1,139	£1,801	£1,538
M&E	£1,442	£1,509	£1,746	£1,998	£1,290	£1,139	£1,838	£1,566
External Works	£458	£87	£110	£18	£187	£95	£131	£149
Utilities	£0	£0	£0	£0	£0	£0	£0	£0
Prime Cost	£3,867	£3,245	£3,574	£4,490	£3,182	£2,875	£3,935	£3,594
Preliminaries	£724	£557	£557	£390	£421	£463	£769	£553
Prime Cost &	£4,591	£3,802	£4,131	£4,880	£3,603	£3,338	£4,704	£4,147
Pricing adjustments - add for change in reqs 5-10%	£459.11	£380.24	£413.13	£0.00	£180.17	£0.00	£0.00	£206
Net Zero carbon (15%)	£758	£627	£682	£729	£568	£500	£706	£655
SHTM compliance	£290	£241	£261	£279	£218	£192	£270	£250
- Deduct abnormals	£0	£0	£0	£0	£0	£0	£0	£0
REVISED TOTAL	£6,098	£5,051	£5,487	£5,888	£4,569	£4,029	£5,680	£5,264
Intelligent benchmark (mean of above)	£5,254							

Notes	Costs exclude inflation beyond 1Q 2022, VAT etc

Excludes design fees / contingency / OH&P - costs rebased to Q1 2022

THOMSONGRAY CONSTRUCTION CONSULTANTS

Benchmarking

Edinburgh Cancer Centre - Feasibility Estimate

2 June 2022

8.0 Benchmarking

ONCOLOGY / CANCER CARE BENCHMARKING

PROJECT DESCRIPTIONS							
BENCHMARK PROJECTS - Adjusted for Inflation to Q1 2022	Colchester Hospital	Hereford	Altnagelvin	Lanarkshire Beatson	Anchor Centre	WGH Linear Accelerator	AVERAGE
Tender Date	1Q2019	3Q2012	1Q2014	1Q2012	4Q2019	4Q2019	
Key Specification Issues	3 Storey cancer treatment centre	Single and 2 storey extension satellite radiotherapy centre	Radiotherapy unit including 4 linear accelerator bunkers, imaging including	Radiotherapy and linear accelerator block	Radiotherapy Haematology and Oncology Centre	3 storey extension including 2 linear accelerator bunkers, + supporting	
M	V Good	N/A	N/A	V Good	N/A	N/A	
Contract	Procure 21+	Traditional JCT	D&B	HFS Frameworks 1	HFS Frameworks 2	HFS Frameworks 2	
Area (m2)	3,053	1,934	14,592	3,095	5,600	1,707	
Excavation and Earthworks	£0	£0	£0	£0	£0	£0	£0
Piling	£0	£0	£0	£0	£0	£0	£0
Concrete Work	£0	£0	£0	£0	£0	£0	£0
Brickwork & Blockwork	£0	£0	£0	£0	£0	£0	£0
Substructure	**£400**	**£260**	**£419**	**£347**	**£291**	**£1,641**	**£560**
Frame	£950	£800	£277		£480	£155	£445
Upper Floors	£131	£31	£120		£257	£11	£93
Roof	£154	£111	£274		£78	£121	£123
Stairs & Balustrades	£17	£18	£17		£63	£12	£21
External Walls	£467	£134	£200		£578	£364	£309
Windows & External Doors	£0	£54	£197		£2	£101	£59
Internal Walls & Partitions	£114	£59	£163		£379	£112	£138
Internal Doors	£71	£94	£229		£78	£85	£88
Superstructure	**£905**	**£1,270**	**£1,480**	**£1,295**	**£1,994**	**£961**	**£1,318**
Wall Finishes	£30	£21	£64		£66	£71	£43
Floor Finishes	£60	£37	£104		£61	£66	£55
Ceiling Finishes	£68	£22	£50		£113	£33	£48
Painting and Decorating	£0	£0	£0		£0	£0	£0
Finishes	**£167**	**£80**	**£218**	**£132**	**£240**	**£170**	**£168**
FF&E	**£1,874**	**£0**	**£102**	**£395**	**£108**	**£89**	**£395**
Sanitary Appliances	£0	£0	£43		£31	£46	£20
M&E Installations	£1,740	£0	£1,674		£2,026	£1,158	£1,100
M&E	**£1,740**	**£1,077**	**£1,717**	**£1,298**	**£2,067**	**£1,204**	**£1,516**
External Works	**£192**	**£123**	**£140**	**£19**	**£93**	**£29**	**£99**
Utilities	**£91**	**£0**	**£76**	**£26**	**£0**	**£0**	**£32**
Prime Cost	**£5,168**	**£2,810**	**£4,173**	**£3,489**	**£4,772**	**£4,094**	**£4,086**
Preliminaries	**£637**	**£686**	**£712**	**£554**	**£402**	**£664**	**£609**
Prime Cost & Preliminaries	**£5,805**	**£3,496**	**£4,885**	**£4,053**	**£5,174**	**£4,758**	**£4,695**
Pricing adjustments - add for change in regs 5-10%	£581	£524	£488	£405	£0	£0	£333
Net Zero carbon (15%)	£958	£603	£808	£889	£776	£714	£758
SHTM compliance	£367	£482	£616	£513	£298	£274	£422
- Deduct abnormals	-£1,300	£0	£0	£0	-£56	£0	-£226
REVISED TOTAL	£6,411	£5,008	£6,797	£5,840	£6,192	£5,746	£5,979
Intelligent benchmark (mean of above)				**£5,979**			

Notes Costs exclude inflation beyond 1Q 2022, VAT etc
Excludes design fees / contingency / OH&P - costs rebased to Q1 2022

9.0 Benchmarking

PHARMACY BENCHMARKING

PROJECT DESCRIPTIONS				
BENCHMARK PROJECTS - Adjusted for Inflation to Q1 2022 (index 348)	Royal United Hospital	Birmingham Childrens Hospital	Ipswich Hospital	AVERAGE
Tender Date	4Q2015	2Q2012	4Q2015	
Key Specification Issues	3 Storey Pharmacy Unit	Single Storey Pharmacy Unit	2 storey Aseptic preparation unit extension	
BREEAM	N/A	N/A	N/A	
Contract	NEC3	Traditional JCT	NEC3	
Area (m2)	2,148	118	1,127	
Excavation and Earthworks	£0	£0	£0	£0
Piling	£0	£0	£0	£0
Concrete Work	£0	£0	£0	£0
Brickwork & Blockwork	£0	£0	£0	£0
Substructure	**£160**	**£226**	**£102**	**£162**
Frame	£117	£0	£115	£77
Upper Floors	£47	£0	£73	£40
Roof	£113	£0	£148	£88
Stairs & Balustrades	£17	£0	£14	£10
External Walls	£217	£0	£142	£120
Windows & External Doors	£59	£0	£89	£49
Internal Walls & Partitions	£54	£0	£58	£37
Internal Doors	£62	£0	£23	£28
Superstructure	**£888**	**£1,688**	**£661**	**£1,010**
Wall Finishes	£18	£0	£33	£17
Floor Finishes	£33	£0	£74	£36
Ceiling Finishes	£24	£0	£15	£13
Painting and Decorating	£0	£0	£0	£0
Finishes	**£78**	**£318**	**£122**	**£172**
FF&E	**£49**	**£518**	**£0**	**£189**
Sanitary Appliances	£2	£0	£4	£2
M&E Installations	£1,163	£1,612	£1,629	£1,468
M&E	**£1,168**	**£1,612**	**£1,632**	**£1,470**
External Works	**£23**	**£227**	**£480**	**£243**
Utilities	**£0**	**£0**	**£0**	**£0**
Prime Cost	**£2,168**	**£4,588**	**£2,987**	**£3,247**
Preliminaries	£318	£702	£594	£537
Prime Cost & Preliminaries	**£2,472**	**£5,288**	**£3,581**	**£3,784**
[illegible]	£123.62	£528.80	£179.54	£277
- Deduct abnormals	£0	£0	£0	£0
Net Zero carbon (15%)	£389	£873	£566	£609
SHTM compliance	£149	£334	£217	£234
REVISED TOTAL	£3,136	£7,024	£4,583	£4,904
Intelligent benchmark (mean of above)	£4,904			

Notes Costs exclude inflation beyond 1Q 2022, VAT etc

Excludes design fees / contingency / OH&P - costs rebased to Q1 2022