



West of Scotland Regional Planning Group

Satellite Radiotherapy Facility

Full Business Case

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Contents	Page
1 Executive Summary	7
1.1 Introduction	7
1.2 Strategic Context	7
1.3 Option Appraisal Process	8
1.4 Commercial/ Financial Position	8
1.5 Conclusion and Recommendation	9
2 Strategic Case	10
2.1 Strategic Context	10
2.2 Organisational Overview	14
2.3 Business Strategy and Aims	15
2.4 Other Organisational Strategies	17
2.5 Investment Objectives	25
2.6 Existing Arrangements	27
2.7 Business Needs – Current and Future	29
2.8 Agreed Scope/ Service Requirements	33
2.9 Benefits Criteria	38
2.10 Strategic Risks	41
2.11 Constraints and Dependencies	45
3 Economic Case	46
3.1 Introduction	46
3.2 Critical Success Factors	47
3.3 Main Business Options	48
3.4 Preferred Way Forward	49
3.5 The Short Listed Options	49
3.6 NPC/ NPV Findings	50
3.7 Benefits Appraisal	52
3.8 Risk Assessment	52
3.9 Preferred Option	53
3.10 Sensitivity Analysis	54

4	The Commercial Case	55
4.1	Introduction	55
4.2	Agreed Scope and Service	56
4.3	Agreed Risk Allocation	60
4.4	Agreed Charging Mechanisms	61
4.5	Agreed Key Contractual Arrangements	61
4.6	Agreed Personnel Implications	65
4.7	Agreed Implementation Timescales	68
4.8	Agreed Accountancy Treatment	68
5	The Financial Case	69
5.1	Introduction	69
5.2	Capital/ Funding Requirement	69
5.3	Revenue Impact	71
5.4	Impact on Balance Sheet	73
5.5	Impact on Income & Expenditure Account	73
5.6	Stakeholder Support	74
5.7	Overall Affordability	74
6	The Management Case	75
6.1	Introduction	75
6.2	Procurement Strategy	75
6.3	Project Management	75
6.4	Change Management	81
6.5	Benefits Realisation	81
6.6	Risk Management	81
6.7	Contract Management	82
6.8	Post Project Evaluation	82
6.9	Contingency Plans	83
7	Conclusion	84
7.1	Summary	84

Appendices:

- Appendix One: Letters of Support
- Appendix Two: A+DS Support
- Appendix Three: AEDET
- Appendix Four: Project Structure
- Appendix Five: Programme
- Appendix Six: Communication Plans
- Appendix Seven: Site Plans and 3D Visuals
- Appendix Eight: Risk Register
- Appendix Nine: Schedule of Accommodation
- Appendix Ten: Capacity and Utilisation Assumptions
- Appendix Eleven: Benefits Appraisal Workshop
- Appendix Twelve: Financial Movement

Glossary of Terms

#'s	Fractionations
BWoSCC	Beatson West of Scotland Cancer Centre
CE	Compensation Event
CNS	Clinical Nurse Specialist
CSF	Critical Success Factor
CT	Computed Tomography
DHCP	Dynamic Host Configuration Protocol
DNA	Did Not Attend
FBC	Full Business Case
GJNH	Golden Jubilee National Hospital
GRO	General Registry Office
HAI	Hospital Acquired Infection
HEI	Higher Education Institution
IA	Initial Agreement
IMRT	Intensity- Modulated Radiation Therapy
IRMER	Ionising Radiation (Medical Exposure) Regulations
ISD	Information Services Division
ITU	Intensive Treatment Unit
LAN	Local Area Network
LinAc	Linear Accelerator
MCN	Managed Clinical Network
MPTC	Maximum Price/ Target Cost
MRI	Magnetic Resonance Imaging
NHS A&A	NHS Ayrshire & Arran
NHS D&G	NHS Dumfries & Galloway
NHS FV	NHS Forth Valley
NHS GG&C	NHS Greater Glasgow & Clyde
NHS WI	NHS Western Isles
NHSH	NHS Highland
NHSL	NHS Lanarkshire
NHSHIS	NHS Health Improvement Standards
NoSCAN	North of Scotland Cancer Service
NPC	Net Present Cost
NPD	Non for Profit Distribution
NPV	Net Present Value
OBC	Outline Business Case
PET	Positron Emission Tomography
PM	Project Manager
PPE	Post Project Evaluation
PSC	Professional Services Contract
PSCP	Principal Supply Chain Partner
QA	Quality Assurance
SABR	Stereotactic Ablative Body Radiotherapy
SCIM	Scottish Capital Investment Manual
SGHSCD	Scottish Government Health and Social Care Directorates
SPECT	Single Positron Emission Computed Tomography
SRAG	Scottish Radiotherapy Advisory Group
TCP/ IP	Transmission Control Protocol/ Internet Protocol
VMAT	Volumetric Modulated Arc Therapy
VoIP	Voice over Internet Protocol
WAN	Wider Area Network
WoSCAN	West of Scotland Cancer Network
WoSRPG	West of Scotland Regional Planning Group
WTE	Whole Time Equivalent

1 Executive Summary

1.1 Introduction

This Full Business Case (FBC) sets out the strategy for the delivery of a Satellite Radiotherapy Facility for the West of Scotland. This will meet the projected future increase in demand and relieve the current pressures in demand at the Beatson West of Scotland Cancer Centre (BWoSCC) and will enable the achievement of NHS Scotland's 'Route Map to the 2020 Vision for Health and Social Care' (2013), alongside progressing the 'Detect Cancer Early' programme, the 'Better Cancer Care' action plan and the 'Health Care Quality Strategy'. It will also provide significant improvements both in access for patients to radiotherapy and the efficiency of service delivery.

1.2 Strategic Context

The BWoSCC is the busiest radiotherapy centre in the United Kingdom and is presently operating at close to maximum capacity. The level of activity is unsustainable and steps need to be taken to increase the available capacity for the West of Scotland population.

Reviews have previously been undertaken to look at opportunities for realignment through the National Pathways and Processes Group (Jan-July 2010). This work explored maximising the current use of the existing 25 Linear Accelerators (LinAcs) operating nationally across Scotland. The group recommended that a further 3 additional LinAcs are required to meet predicted demand on radiotherapy services by 2016.

In addition to the current immediate requirements for a Satellite, throughout this FBC consideration has also been given to additional increases in demand based on the findings of a number of published strategic reports.

In 2006, the Radiotherapy Activity Planning for Scotland 2011-2015 report indicated that due to rising levels of cancer incidence there will be a significant increase in the capacity requirements for radiotherapy in Scotland over the next ten to fifteen years. This rise in demand will result from:

- Increased incidence of cancer
- Potential increase in indications for radiotherapy in clinical practice
- Rapid treatment developments and increased complexity

In 2009, the Scottish Radiotherapy Advisory Group (SRAG) commissioned a report to test whether the predictions made in the 2006 report still held true, and new estimates were calculated in the report on re-modelling of radiotherapy demand and capacity data. The re-modelling work was based on Information Services Division (ISD) statistics updated in 2010, which projects cancer incidence in Scotland to 2020.

The outcome was consistent with other reports which have attempted to predict demand for radiotherapy including a Royal College of Radiologists report in 2002.

This development would therefore initially provide a 3 bunker, 2 LinAc Satellite Radiotherapy Facility, which will increase the available capacity and help to alleviate the immediate pressing capacity constraints at the BWoSCC.

The ambition for the West of Scotland is for there to be 14 LinAcs in clinical use – 11 at the Beatson, 3 at the Satellite Facility. To achieve this balance the Satellite Facility will be clinically operational with 2 LinAcs during the latter part of 2015, with an additional 3rd LinAc potentially provided from the national replacement programme, although there has been no agreement as to the purchase of the 3rd Satellite Facility LinAc at this time.

1.3 Option Appraisal Process

A detailed process to determine a long list of possible options, assessment of these, and the development of a short list of sites for the Satellite Radiotherapy Facility was undertaken for OBC.

Following a non-financial benefits appraisal workshop and further financial appraisal, a preferred option to meet service objectives was identified at Monklands District General Hospital. This process is set out within this FBC.

Sensitivity testing was been carried out from both a non-financial and financial perspective to confirm that the identified site does not change under different scenarios and this has been clearly shown to be the case.

1.4 Commercial/ Financial Position

The West of Scotland Satellite Radiotherapy Facility will be delivered through the Frameworks Scotland procurement route and this FBC has been developed in accordance with those requirements and also the Scottish Capital Investment Manual.

Capital Costs of the new facility are as follows:

Table 01: Capital Costs of the Satellite Radiotherapy Facility

	Monklands District General Hospital FBC
<u>Capital Costs</u>	
Building Capital Cost	£11,346,229
Non Works Costs	£39,568
Fees	£1,604,964
Equipment	£4,658,333
Quantified Risk Allowance	<u>£720,935</u>
	<u>£18,370,029</u>
Irrecoverable VAT	<u>£3,578,006</u>
	<u>£21,948,035</u>

Total recurring annual revenue costs of £4.142m are to be funded by West of Scotland Boards in line with existing agreed proportions.

1.5 Conclusion and Recommendation

With current high levels of activity at the BWoSCC and predicted rising levels of cancer incidence over the next ten to fifteen years, there will be a significant increase in the capacity requirements for radiotherapy in Scotland.

Providing the Satellite Radiotherapy Facility on the Monklands General Hospital site will improve patient experience whilst offering services locally to where people live. As a central element of the proposal this will in turn enable the meeting of the challenges of implementing NHS Scotland's 'Route Map to the 2020 Vision for Health and Social Care' (2013), alongside progressing the 'Detect Cancer Early' programme, the 'Better Cancer Care' action plan and the 'Health Care Quality Strategy'.

Approval of this FBC will ensure that the project can move forward towards the development of the Construction Phase for this critical project.

2 Strategic Case

2.1 Strategic Context

In 2006, the Radiotherapy Activity Planning for Scotland 2011-2015 report indicated that due to rising levels of cancer incidence there will be a significant increase in the capacity requirements for radiotherapy in Scotland over the next ten to fifteen years. This rise in demand will result from:

- Increased incidence of cancer
- Potential increase in indications for radiotherapy in clinical practice
- Rapid treatment developments and increased complexity

In 2009, the Scottish Radiotherapy Advisory Group (SRAG) commissioned a report to test whether the predictions made in the 2006 report still held true and new estimates were calculated in the report on re-modelling of radiotherapy demand and capacity data, May 2010 (R. Chalmers, S. Erridge and C. Featherstone). The re-modelling work was based on Information Services Division (ISD) statistics updated in 2010, which projects cancer incidence in Scotland to 2020.

The updated report estimates that at least 237,200 fractions should be delivered across Scotland (or at least 263,600 if an additional 10% is factored in to prevent waiting times arising from fluctuations in demand, quality assurance and introduction of new techniques).

This was consistent with other reports which have attempted to predict demand for radiotherapy including a Royal College of Radiologists report in 2002 which recommended 4 LinAcs per million population rising by 5% per year to take account of increasing incidence and complexity to 5.5 per million population by 2010.

Further work was undertaken by the Scottish Government's National Pathway and Processes Group, which reported on current capacity for radiotherapy and utilisation of current stock of linear accelerators across Scotland, providing recommendations for addressing future demand. Consideration was made to application of various criteria including different working patterns, throughput and the number of operational accelerators. An estimated additional three linear accelerators would support the anticipated demand by 2016, recognising that regional variations would take account of different workload and referral patterns.

In April 2011 the Scottish Government initiated its 'Detect Cancer Early' programme with a central aim of *'improving 5 year survival rates for people in Scotland diagnosed with cancer'*. The programme intends to increase by 25% the number of patients diagnosed in the first stage of breast, lung and colorectal cancer and as such has a critical influence on the required development of radiotherapy and cancer services.

'Better Cancer Care – An Action Plan, 2008' noted that the number of people diagnosed with cancer is likely to rise to nearly 35,000 per annum between 2016 and 2020. This compares to around 30,000 patients per year between 2006 and 2010 reflecting the impact of Scotland's ageing population as well as improvements in diagnosis. With this dramatic

increase in the number of patients comes a requirement to increase treatment, which in turn, places additional demand on radiotherapy services both nationally and locally.

The ‘Better Cancer Care’ action plan identifies the following key commitments:

Diagram 01: ‘Better Cancer Care’ commitments

- Improving outcomes through early diagnosis and more timely and improved treatment through advances in technology
- Cancer prevention through healthier lifestyle choices
- Reducing inequalities in outcome
- Support and treat the increasing number of patients living with cancer
- Improving the quality of cancer care for patients

In addition to the ‘Detect Cancer Early’ programme, the ‘Health Care Quality Strategy’ of May 2010 is another major complimentary driver which underpins the requirement for additional radiotherapy facilities. The central pillars of this strategy are as follows:

Diagram 02: ‘Health Care Quality Strategy’ central pillars

- Caring and compassionate staff and services;
- Clear communication and explanation about conditions and treatment;
- Effective collaboration between clinicians, patients and others;
- A clean and safe environment;
- Continuity of care; and
- Clinical excellence

A further strategic driver to the project is the Scottish Government’s ‘Better Health, Better Care’ Action Plan of 2007 which sets out the drive toward locally provided services as a key priority for health care. This has led to a 30 minute travel time being adopted as a benchmark for the Satellite Radiotherapy Facility.

Against the backdrop of these programmes, radiotherapy activity and the complexity of its treatment, planning and delivery is expected to increase significantly over the next decade. This is due to both national and local factors, alongside changing clinical techniques which can be summarised as follows:

- The ‘Detect Cancer Early’ programme is expected to have a significant impact in both the number of patients being referred for radiotherapy but also in shifting the balance towards a higher number of radical patients accessing treatments as cancers are detected much earlier. Current projections suggest a 25% increase for the three tumour sites being targeted at present (breast, lung and colorectal). There is also a projected increase in the incidence of prostate cancer and this will also be treated at the satellite.
- An increasing demand for more complex planning and treatments primarily using IMRT/VMAT planning techniques. With the increase in number of treatment machines and new

planning techniques available there will be a commensurate increase for more quality assurance checking to ensure treatments are delivered in an optimum and safe manner.

- An increasing number of patients will survive and the numbers requiring subsequent re-treatments will rise. This places a greater burden on the accuracy and safe delivery of radiotherapy to ensure critical organs do not receive significant cumulative doses over multiple treatments.
- National capacity modelling of radiotherapy suggests that there has been an under provision for radiotherapy facilities due to a lower uptake for radiotherapy than that predicted;
- Cancer access targets apply to around 20% of radiotherapy patients at present based on current experience and it may be anticipated that these be extended to cover a wider number of patients receiving radiotherapy in the future.
- Changes in clinical practice as hypofractionated treatments are expanded and adopted for a large range of clinical sites, including lung and prostate. This places additional requirements for confidence in the accuracy of the treatment planning and tumour targeting.
- Elimination of Conventional Simulator imaging in the planning pathway with reliance placed on the use of CT Simulator.
- An increase in the use of concomitant chemo-radiotherapy with potential for combination drug therapies that may provide opportunity to enhance the uptake of radiation by cancerous cells or protect healthy tissue during radiotherapy.
- An increased utilisation of modern imaging facilities e.g. CT, MRI, SPECT, PET.
- An increased number of patients to receive in-vivo patient dosimetry during treatment.
- An ageing population.
- An increasing need for positioning aids and this will increase the work of the mould room.
- An increasing complexity of the linear accelerator sub-systems will impact on their repair, maintenance and QA to safeguard the reproducibility in delivering high accuracy treatments, particularly as the numbers of hypofractionated treatments increase with large doses per fraction.
- A reliance on the high availability and uptime of the radiotherapy information management and planning systems that underpin the safe and reliable delivery of radiotherapy services. This is essential as ‘paperlite’ systems are implemented to support the multi-disciplinary team operating at the Satellite Facility and other hospitals across the region. The need for continuously available systems to deliver the radiotherapy planning and treatment will be underpinned with the provision of critical network links between the Beatson and the Satellite Facility.

Overarching these programmes and plans, NHS Scotland's 'Route Map to the 2020 Vision for Health and Social Care' (2013), states that:

'Our vision is that by 2020 everyone is able to live longer healthier lives at home, or in a homely setting. We will have a healthcare system where we have integrated health and social care, a focus on prevention, anticipation and supported self- management'.

Under the new Route Map, which highlights priority areas for acceleration, one of the key deliverables for 2013/ 14 is:

'There will be a measurable increase in the early detection of cancer across Scotland, and particularly in deprived areas resulting in better outcomes'.

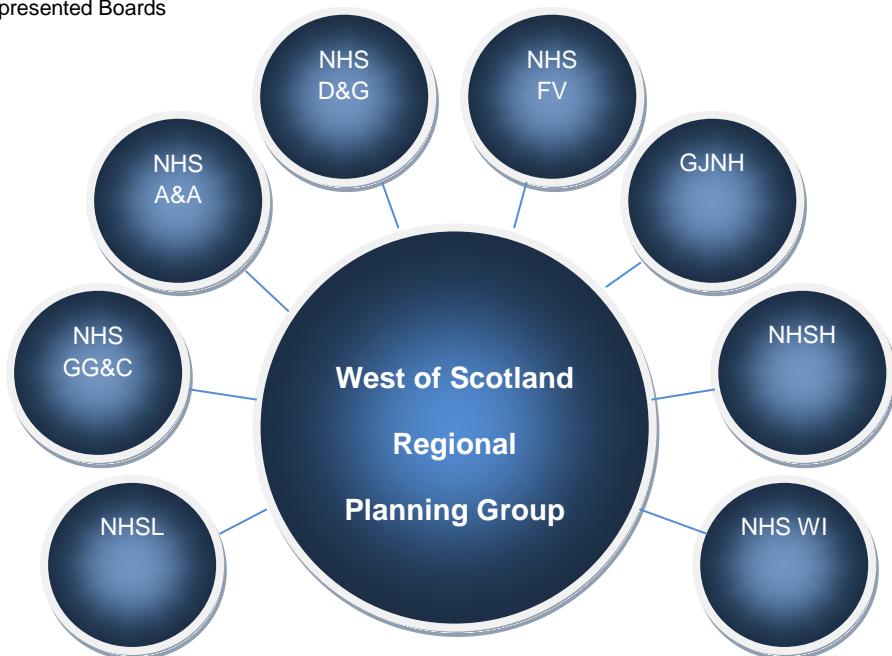
These drivers and demographic developments set a clear need for both increased capacity in radiotherapy services and relief for the current pressures on demand at the Beatson facility. It is this strategic need that underpins the development in this FBC.

2.2 Organisational Overview

Regional Planning is a major strategic function for Scottish territorial Health Boards. Where services require a population in excess of the average Board population (c 400,000) these need to be planned across traditional Board boundaries to ensure that such services are clinically sustainable and are supported by appropriate funding arrangements. Typically these have been specialist services such as neurosciences, cancer or cardiac services. The West of Scotland Boards have a strong history of collaborative working and the Satellite Radiotherapy Facility is one in a long line of strategic developments which have been jointly planned and realised by these Boards working together for the benefit of the regional population.

The West of Scotland Regional Planning Group (WoSRPG) consists of representation from the following NHS Boards:

Diagram 03: Represented Boards



The WoSRPG leads a wide range of planning activities within regional workstreams, specialist services planning groups and sub groups such as the regional Managed Clinical Networks (MCNs). The Regional Cancer Advisory Group (RCAG) oversees the implementation of an extended work programme to improve cancer services, including radiotherapy, across the West of Scotland Boards. Central to this is a commitment to prevent cancer from starting, detecting and treating cancer as early as possible, and to improve the experience and outcomes for individual patients.

Continued improvements in the delivery and quality of cancer services in the West of Scotland have been achieved through collaborative regional working between the different groups of healthcare professionals that make up the regional cancer Managed Clinical Networks (MCNs), different Boards, and between patients and healthcare professionals. The development of a satellite radiotherapy facility is the second regional cancer capital scheme which has been planned on a regional basis, the first being the Beatson West of Scotland Cancer Centre at Gartnavel.

2.3 Business Strategy and Aims

The Scottish Government's requirement to take forward the Quality Agenda through NHS Scotland's 'Route Map to the 2020 Vision for Health and Social Care' (2013), the need to achieve financial sustainability, and the need for improving the efficiency of service delivery are all key drivers for NHS Boards to implement. These drivers are also reflected in regional plans which need to improve and develop the clinical services offered regionally.

The BWoSCC is the busiest radiotherapy centre in the United Kingdom and is presently operating at close to maximum capacity. This level of activity is unsustainable and steps need to be taken to increase the available capacity for the West of Scotland population. The majority of cancer patients requiring radiotherapy live in the central belt of Scotland and Government policy is to provide treatment as locally as possible. Reviews have previously been undertaken to look at opportunities for realignment through the National Pathways and Processes Group (Jan-July 2010). This work explored maximising the current use of the existing 25 LinAcs operating nationally across Scotland. The group concluded that if existing machines were operational for 9 hours per day (with an average throughput of 5 fractions per hour) then the lower end of the predicted rise in demand may be met. However, even with an increase to a 10 hour working day it would not be possible to meet the upper end of the predicted demand for radiotherapy with the existing stock of LinAcs across Scotland. The group therefore recommended that at least 3 additional Linear Accelerators would be required in Scotland to meet a predicted demand on radiotherapy services of 250,000 fractions by 2016.

A scoping exercise was carried out to explore opportunities for developing a satellite radiotherapy facility for the Central Belt of Scotland and to assist in relieving demand pressures experienced by the West of Scotland and East of Scotland Cancer Centres. The scoping exercise demonstrated that a Central Scotland facility would not relieve sufficient pressure from both centres and it was agreed that there was a need for each region to pursue a separate solution. The West of Scotland Regional Planning Group agreed with the need to pursue the development of a satellite radiotherapy facility to support services provided by the BWoSCC. A Project Board was established to oversee the development of the Outline Business Case for West of Scotland Boards and it has continued to oversee the work for this Full Business Case.

In addition to the current high levels of demand, there is also a documented projected increase in incidence of cancer due to a number of factors. The national policy context will also have a critical influence on the required development of radiotherapy and cancer services in the region. The Scottish Government has initiated its 'Detect Cancer Early' programme with its central aim of 'improving 5 year survival rates for people in Scotland diagnosed with cancer'. The programme will aim to increase by 25% the number of patients diagnosed in the first stage of cancer. Concentrating initially on the three most prevalent cancers i.e. lung, breast and colorectal cancer. There is also a projected increase in the incidence of prostate cancer and this will also be treated at the satellite. These patients will require treatment, which will in turn, place additional demand on radiotherapy services. The full impact of 'Detect Cancer Early' is still being quantified.

In addition to the ‘Detect Cancer Early’ programme, the ‘Health Care Quality Strategy’ is another major driver underpinning this project. The central pillars of the strategy are to ensure that care is person centred, clinically effective and safe. All of these quality dimensions will be enhanced through this important development.

In addition to the strategic context, it is acknowledged that the proximity of the population to specialist services assists in ensuring greater access and uptake of services, which is of particular benefit for patients from more deprived areas. This service development will improve local access to radiotherapy services for more patients closer to their home and reduce waiting times for treatment following diagnosis.

2.4 Other Organisational Strategies

2.4.1 Radiotherapy Information Systems Strategy

As detailed in recent Royal College of Radiologists guidance on the management and governance of additional radiotherapy capacity, the delivery of an efficient and high quality radiotherapy service at a satellite facility is underpinned by effective and integrated radiotherapy and clinical information systems. Modern radiotherapy relies heavily on highly optimised electronic pathways through booking, imaging, planning and treatment, with large volumes of specialised data, information and images flowing between database systems and the radiotherapy equipment itself supporting the whole multi-disciplinary team in their work effort.

Experience has shown that use of electronic patient record facilities ensures that good levels of communication occurs across the radiotherapy professional groups, with clear and concise information being more readily available at each stage of the radiotherapy pathway. Errors can occur when radiotherapy planning and tumour voluming is undertaken in the absence of full clinical information. Good access to the patient's full case record, including detail of any previous radiotherapy is a key requirement. Delivery of these facilities with a satellite is more challenging when based around paper case records, and this development will adopt 'paperlite' systems within radiotherapy prescribing, planning and treatment. This includes the complete transfer from paper based records for all aspects of the radiotherapy pathway and high levels of access to the electronic clinical case record systems being developed across the West of Scotland. Authorisation within a full electronic environment for planning and treatment within the regulatory framework will be implemented carefully.

An integrated approach for radiotherapy staff to access the right information at the right time is essential in maximising the ease and safety with which patient information and the associated complex data can be interchanged and distributed seamlessly between the radiotherapy planning, treatment, imaging systems and the treatment equipment. A high degree of system interconnectivity is required to minimise duplication of activities for the purposes of patient safety and maximising efficient working practices.

This strategy is geared towards supporting the overall delivery of improved clinical outcomes and a high level of operational efficiency and effectiveness.

2.4.1.1 Network Infrastructure

This vision will rely heavily on resilient and redundant networked, electronic systems. A wide area network (WAN) system operating between the satellite and the radiotherapy systems in Glasgow is one essential component in this architecture. A new WAN link will be installed integrating the existing Local Area Networks (LAN), operating a fully switched TCP/IP system run across Gigabit networks between radiotherapy servers and equipment based in Glasgow and the radiotherapy equipment located at the satellite including linear accelerators, treatment planning systems, and CT Simulator.

The operational dependence of the satellite for its day to day clinical service on these wide area computer network connections and access to remotely hosted computer systems will be

significant. Ensuring an adequate and resilient technical architecture is key to the delivery of effective and safe clinical services. Sufficient infrastructure resilience, in conjunction with well thought out contingency planning, will be essential elements of managing the risks associated with being dependent upon computer services hosted in Glasgow. The technical infrastructure extends through to the existing and new rooms housing the radiotherapy servers, which may be distributed across both sites, dependent on the technical solution adopted. The resiliency of these facilities to support the high system availability will be reviewed in this strategy.

In addition to the resilient Wide Area Network solution, providing a continuous and high availability of the clinical systems, each of the Board's Microsoft network services including Active Directory and Dynamic Host Configuration Protocol (DHCP) will require to be integrated such that each of the Boards' Directory services will be 'trusted'. This will enable users to access in a seamless fashion the same information systems hosted in Glasgow as at the satellite facility

The satellite location would also benefit from wireless network access for patients and staff, as currently available in the BWoSCC. The technical infrastructure will provide the capability to deliver Voice Communication over Internet Protocol (VoIP) and Video Conferencing allowing for the provision of tele and video communication services. This will aid the essential levels of communication between the main department and the satellite location, where staff will require to review and discuss specific planning and treatment queries at short notice, and where components of the team may be distributed across both sites. Modern telecommunication systems will be implemented to facilitate improved means for the team to contact and communicate, including remote application sharing and one-one video links.

2.4.1.2 Clinical/ Radiotherapy Systems

To support the clinical services at the satellite location it will be necessary to provide continuous access to the following clinical systems:

- Radiotherapy R&V Management Systems
- Radiotherapy Planning System & Independent Checking System
- Patient Management Systems
- Chemotherapy System (CEPAS)
- National PACS
- Clinical Portal Systems
- Radiotherapy ISO Quality Management System
- Radiotherapy Physics Equipment Management System
- Laboratory Systems
- OrderComms Systems
- Supplies Ordering Systems
- Radiology Information Systems
- Time & Attendance System
- Office Applications (Word, Excel etc)
- Specialised Radiotherapy QA & Physics Systems

2.4.1.3 Ownership and Integrity of Case Records

Maintaining the completeness and integrity of patients electronic records will become more complex the greater the integration with the host site. The ownership and integrity of shared electronic records for patients arising from a number of Health Boards, being treated at the satellite location will need to be considered in full in relation to how this impacts the recording and reporting of information in the various clinical systems.

2.4.2 Regional Radiotherapy Satellite Workforce Plan

The West of Scotland Radiotherapy Satellite Facility will provide non-surgical oncological services in the planning and delivery of radiotherapy, to support the needs of cancer patients in the West of Scotland population, located within the central belt area. The facility will be an operational satellite of the BWoSCC and clinical focus will be on the radical treatment of patients with breast, lung, prostate and colorectal tumours.

The Facility will provide the following therapeutic services:

- External beam radiotherapy planning and treatment services based around two linear accelerators installed into dedicated shielded treatment rooms (bunker) for 2015
- CT Simulator with virtual simulation facilities
- Treatment planning
- Mould Room
- On-treatment review clinics.

2.4.2.1 Workforce Assumptions

The workforce model is predicated on two Linear Accelerators. The staffing models assume:

- A clinical working day pattern of 8.30am – 5pm (8½ hrs). If demand requires, the option to “flex-up” to a 9 hr day is possible through staff overtime/ out of hours.
- Physics staff will be present in the facility from 07:30 – 20:00 to undertake quality assurance testing and repair/ maintenance work on the radiotherapy equipment.
- Only patients within the clinical sites of breast, colorectal, lung & prostate.
- Provision for cover of leave to sustain a 52 week service.
- A paperlite environment.

2.4.2.2 Nursing Workforce

The Nursing workforce will provide information, support, wound management and dressings for patients attending the satellite unit. This will require 2.50 WTE nurses. Radiography support staff (band 3s) will adopt a hybrid role and will also provide support to nursing.

A further 2.00 WTE Oncology Clinical Nurse Specialists (CNS) will be required to provide a resource of 0.5 WTE CNS per clinical site. They will also contribute to on treatment review, however, patients' access to the CNS may be limited due to the part-time nature of roles.

Table 02: Nursing WTE

	WTE per Band		Total
	Band 5	Band 6	
Nurse	1.50	1.00	2.50
Clinical Nurse Specialist - Oncology		2.00	2.00
Nursing	1.50	3.00	4.50

2.4.2.3 Medical Workforce

Medical cover will be required at all times during the unit operating hours for on-treatment reviews, dealing with unwell patients, IV contrast and any other unexpected issues. It is proposed that 2 staff grade doctors will be required to cover these duties. An additional 2 Consultant medical staff will also be required.

Table 03: Staff Grade WTE

	Staff Grade	Total
Staff Grade	2.00	2.00
Consultant	2.00	2.00
Medical	4.00	4.00

2.4.2.4 Radiography

The Society of Radiographers recommended a staffing level of 1.33 WTE radiographers per Linear Accelerator per hour for core service provision (excluding advanced practice roles such as breast planning and weekly reviews). This equates to 24.87 WTE which is higher than the 23.50 WTE included in the model. The skill mix has been reviewed and although the core number remains the same, a richer skill mix has been agreed to include a band 8a radiographer in line with other satellite services in the UK. There is still the potential, however that the Radiography service at the Satellite unit could be under pressure during periods of high levels of unpredictable absence e.g. sickness, special, carers and maternity leave and prompt management input will be required to avoid the cancellation of patients.

The Society of Radiographers model includes 8-10% of Band 4/ Assistant Practitioners; these are not included in the satellite model due to the planned technology of the satellite equipment and therefore the advanced nature of the techniques which will be applied. These

techniques require real time image review and clinical decision making which cannot be expected of Band 4 staff.

The skill mix of the satellite workforce model is based on the skill mix at the BWoSCC. A review using the Skills Maximisation approach is proposed for CT, Pre-treatment and Linear Accelerator areas and this may identify opportunities for a revised skill mix in the future.

The Band 8 management post will cover all routine aspects of management within the centre, e.g. staff rotation, staff training & CPD, absence management & other HR issues. Support will be provided by the band 7 staff. Professional management support will be provided by senior Radiography staff from the BWoSCC.

Table 04: Radiography WTE

		WTE per Band			Band 7	Band 8	Total
		Band 3	Band 5	Band 6			
Core	Management					1.00	1.00
	LinAcs		4.00	2.00	2.00		8.00
	CT Simulator			1.00	1.00		2.00
	Pre treatment			1.00	1.00		2.00
	Breast Planning			2.00			2.00
	Reviews						
	Radiography Assistants	2.00					2.00
	Cover	0.50	2.00	2.00	2.00		6.50
Total Radiography		2.50	6.00	8.00	6.00	1.00	23.50

Table 05: Mould Room WTE

	Band 5	Band 6	Total
Mould room	1.00	2.00	3.00
Total	1.00	2.00	3.00

2.4.2.5 Medical Physics

Radiotherapy Physics staff play an essential role in the delivery of high quality and safe radiotherapy clinical services. There are two principal groups of staff involved, namely, Clinical Scientists and Clinical Technologists (Dosimetrists and Radiotherapy Engineers), under the Healthcare Scientist grouping. Their roles cover the whole radiotherapy pathway including:

- Management, development and scientific/ technical direction of the radiotherapy service
- Providing the Board's legislative Medical Physics Experts for radiotherapy
- Ensuring the accuracy of radiotherapy treatment through scientific supervision of dose calculation procedures and of ongoing quality control of both equipment and treatment planning

- Responsible for treatment planning of 85% of treatments, QA programme for all equipment/ software, software development & in-vivo dosimetry service
- Design and development of new and innovative patient techniques and their safe implementation
- In house servicing and management of capital radiotherapy equipment and external contracts
- Management and procurement of capital radiotherapy equipment and their replacement programme
- Managing of the integrated networked radiotherapy computing and planning systems
- Lead scientific service development, especially radiotherapy related clinical trials
- Risk assessments, radiation safety, incident review and root cause analysis, source safety, calibrations, audits, quality system
- Teaching and training of staff

The number of Physics staff required for the provision of a physics service to radiotherapy departments depends primarily upon the amount and complexity of equipment used, the number of patients treated and the level of complexity of their treatments, taking account the operational model of the department (e.g. shift arrangements to cover extended working day).

Calculation of the required staffing levels for the West of Scotland Radiotherapy Satellite Facility is based upon national recommendations issued in July 2009 by Institute of Physics and Engineering in Medicine, entitled Recommendations for the Provision of a Physics Service to Radiotherapy (2009). This is the standard staffing model for Physics staffing adopted across the UK. Various factors are taken into account in this calculation inclusive of the number of operational linear accelerators, patient workload and specialised planning techniques, with projections that at least 80% of radical plans being IMRT (either VMAT or forward planned IMRT) based by 2016.

The following Table summarises the additional staff requirements and indicative Bandings for the two linear accelerator facility:

Table 06: Additional Staff WTE

	WTE per Band						
	Band 5	Band 6	Band 7	Band 8a	Band 8b	Band 8c	Total
Dosimetrists	2.00	1.00	1.00				4.00
Physicists			1.00	2.00	1.00	1.00	5.00
Technologists	1.00	1.00	2.00				4.00
Medical Physics Total	3.00	2.00	4.00	2.00	1.00	1.00	13.00

Overall, it is estimated that thirteen additional Physics staff would be required to operate the two additional linear accelerators and associated infrastructure for the Satellite Facility. At least two Medical Physics Experts would be made available in the Satellite across clinical working hours to ensure the Board's legislative requirements were being met. Physics staff will be present in the facility from 07:30 – 20:00 to undertake quality assurance testing and repair/ maintenance work on the radiotherapy equipment.

To provide operational efficiency and optimum clinical cover, it is anticipated that some senior staff will participate in a rota and/ or provide cover arrangements between the main site and the new facility around staff management/ supervision to undertake specialised repair or QA work and for continuous staff competency development and training. New staff are likely to spend an initial period at the BWoSCC before transferring to the satellite for induction and base competency development.

The additional Dosimetrists will undertake specialist planning work with lower grades of staff planning breast and low risk prostate treatments. More experienced Dosimetrists will be integral to the planning and checking of the high levels of advanced VMAT planning such as lung SABR and high risk VMAT prostate plans. Dosimetrists will also continue to support Clinical Oncologists by delineating organs at risk and keeping planning pathways to optimum timescales.

With the BWoSCC and the Satellite operating a paperlite environment, two of the additional radiotherapy engineers will be recruited with experience in supporting specialised radiotherapy clinical applications, with key skills in radiotherapy information technology, with staff providing cover between the two sites. These staff will integrate into the existing specialised Physics support team based at the BWoSCC.

With an expectation that there will be a requirement to commission multiple linear accelerators over the two sites from mid 2015 through until 2016, there will be a need to recruit key staff at an early phase prior to facility coming into full clinical use to enable the essential commissioning work on the linear accelerators to be completed to schedule.

2.4.2.6 Administrative Staffing

Within the BWoSCC, an additional 1.5 WTE of administrative staff would be required to support patient booking. As these staff would be joining an existing service no additional cover is required. (These staff would continue to be managed by the Radiography Service).

In addition, 2.0 WTE reception/ health record staff would be required to cover the reception and patient record management /information /communications between the BWoSCC and the satellite. This includes allowance for leave cover.

Table 07: Administrative WTE

	Band 2	Band 4	Total
Booking	0.50	1.00	1.50
Receptionist / Health Record	2.00		2.00
Total	2.50	1.00	3.50

2.4.2.7 Health Physics, Radiation Protection Advisors

Health Physics, Radiation Protection Advisors have responsibility for radiation protection in the satellite unit. This will require 0.5 WTE Band 8a staff.

2.4.2.8 Host Board staff groups to consider

The group proposed the host Board would need to consider staffing requirements for:

- Pharmacy/ Concomitant Chemotherapy
- Laboratories
- Support services during treatment – physiotherapy, dietetics, diagnostic radiotherapy, speech & language therapy, social work
- Phlebotomy
- Facilities including porters, domestics, security, estates, IT, maintenance, laundry, infection control, catering, health & safety, fire, procurement, waste disposal, telecoms,
- Ambulance services

2.4.2.9 Total Workforce Model

The proposed total workforce for the 2 Linear Accelerators equates to 52.00 WTE.

Table 08: Total Workforce Model

	WTE per Band											Total
	Band 2	Band 3	Band 4	Band 5	Band 6	Band 7	Band 8a	Band 8b	Band 8c	Staff Grade	Consultants	
Admin	2.50		1.00									3.50
Mould Room Staff				1.00	2.00							3.00
Medical										2.00	2.00	4.00
Medical/Health Physics				3.00	2.00	4.00	2.50	1.00	1.00			13.50
Nursing				1.50	3.00							4.50
Radiography		2.50		6.00	8.00	6.00	1.00					23.50
Total	2.50	2.50	1.00	11.50	15.00	10.00	3.50	1.00	1.00	2.00	2.00	52.00

2.4.2.10 Workforce Costing

The costing for the proposed total workforce is as follows:

Table 09: Total Workforce Costing

	WTE per Band											Total
	Band 2	Band 3	Band 4	Band 5	Band 6	Band 7	Band 8a	Band 8b	Band 8c	Staff Grade	Consultants	
Admin	50,200		25,700									£75,900
Mould Room Staff				32,400	79,900							£112,300
Medical										116,600	270,600	£387,200
Medical/Health Physics				97,200	79,900	191,100	140,000	67,800	81,800			£657,800
Nursing				48,600	119,800							£168,400
Radiography		56,400		194,400	319,500	286,700	56,000					£913,000
Total	£50,200	£56,400	£25,700	£372,600	£599,100	£477,800	£196,000	£67,800	£81,800	£116,600	£270,600	£2,314,600

Costings are based on 2013/14 prices and costed at top band -1

2.5 Investment Objectives

It is the intention that the required investment in the Satellite Radiotherapy Facility will:

Diagram 04: Investment Objectives

- Enable speedy access to modernised and integrated radiotherapy services that will support the achievement of national waiting time standards.
- Improve the convenience of access to radiotherapy services that are patient centred, safe and clinically effective
- Provide improved access to modern planning techniques supporting improvements in clinical outcomes.
- Ensure available radiotherapy capacity is able to meet the anticipated rise in demand
- Achieve a BRE Environmental Assessment Method (BREEAM) Healthcare Rating of Excellent
- Service users will see an improvement in the following:
 - The patient pathway for access to radiotherapy services
 - Access to both diagnostic & treatment services not previously available locally

Table 10 sets out the detailed investment objectives, with the associated proposed measures and timescales that the new Satellite Radiotherapy Facility aims to achieve.

Table 10: Investment Objectives

Primary Objective	Outcome	Measure	Timescale
Ensure available radiotherapy capacity relieves capacity constraints at the West of Scotland Beatson Cancer Centre	Utilisation rate at the West of Scotland Cancer Centre will fall below 90% Maintain utilisation rate at new facility below 90%	Monitor utilisation rate at the WoS Beatson Cancer Centre and the new satellite facility	From opening
Meet the anticipated rise in demand	Rise in demand will be accommodated within the below 90% utilisation rate	Monitor cancer numbers treated at each site to ensure balance of treatment between facilities	
Enable speedy access to modernised and integrated radiotherapy services	Improvement in access to radiotherapy service Increased access to new diagnostic and treatment therapies not provided in the current Centre	Cancer – referral to treatment Report on therapies provided and patient volume	1 year from opening
Improve the experience of access and engagement	More hard to reach patients using the centre	Survey of staff and patients regarding how	1 year from opening

to radiotherapy services for people from deprived areas	Uplift in patient satisfaction Reduction in Did Not Attend (DNA) rates	accessible they find the facility Compare DNA rates with current rates	
Improve the convenience of access to radiotherapy services that are patient centred, safe and clinically effective Provide Access to treatment not previously available locally	High use of the new facility from the agreed catchment area Ease of access to new facilities compared to the West of Scotland Beatson Cancer Centre	Stakeholder survey to ensure awareness of new facility Monitor uptake from the agreed catchment area for the new facility Patient survey of effectiveness of and access to the new facility	1 year from opening
Improve and maintain retention and recruitment of staff for the host site	Uplift in satisfaction Decrease in absence rates Decrease in staff turnover	Staff satisfaction survey at end of year 1 Monitor absence records and contrast to previous Monitor staff turnover rates	1 year from opening
Deliver a more energy efficient building within the host sites estate, reducing CO2 emissions and contributing to a reduction in whole life costs through achievement of BREEAM healthcare rating of excellent	Contribute to NHS Scotland's shared target for reduced emissions	Reduced emissions and lower running costs	From opening
Achieve a high design quality in accordance with the Board's Design Statement and guidance available from A+DS Create an environment people want to come to, work in and feel safe in Make tangible the aspirations expressed by stakeholders in the Design Statement	Provide a clinical environment that is safe and minimises any Hospital Acquired Infection (HAI) risks. Building makes a positive contribution to health Building provides a welcoming environment for patients, with security as part of design Building is flexible enough to be 'future proofed'	Use of quality design and materials HAI cleaning audits Building contributes to local regeneration strategy Building meets the standards as agreed in the Design Statement	AEDET Reviews & From opening

Following the submission of the National Design Assessment Proforma (NDAP) for the FBC stage, the Project has the support of A+DS (Appendix Two).

Engagement with Health Facilities Scotland has also been undertaken with regard to the achievement of a BREEAM 'Excellent' rating.

Due to site constraints inherent at Monklands which precludes the use of renewable energy sources such as Biomass, the project cannot achieve the mandatory ENE04 Credits required to attain 'Excellent'. The Project will therefore be assessed under the HFS BREEAM Pragmatic initiative.

2.6 Existing Arrangements

The majority of cancer patients requiring radiotherapy in Scotland reside across the central belt and there is acknowledgement that Government policy is to provide treatment as locally as possible ('Better Health, Better Care, 2007'). Reviews have previously been carried out to look at opportunities of realignment through the National Pathways and Processes Group (Jan-July 2010). This work explored maximising the use of the existing 25 LinAcs currently operating across Scotland.

The group concluded that if existing machines were operational for 9 hours per day (with an average throughput of 5 fractions per hour) then the lower end of the predicted rise in demand may be met. However, even with an increase to a 10 hour working day it would not be possible to meet the upper end of the predicted demand for radiotherapy with the existing stock of LinAcs across Scotland. There would be safety concerns in operating the machines at higher utilisation levels. The group therefore recommended that at least 3 additional Linear Accelerators were required in Scotland to meet a predicted demand on radiotherapy services of 250,000 fractions by 2016.

It is acknowledged that there is some spare capacity within North of Scotland Cancer Network (NoSCAN) but this would not be enough to support the demand profile of patients going forward. In addition, previous experience of asking patients to travel for regularly administered diagnostic and staging tools such as PET scanning has proved difficult as patients have been reluctant to do so. Also, any improvement in the overall utilisation of Scotland's capacity would need to be weighed against the acceptability issues for sick patients travelling.

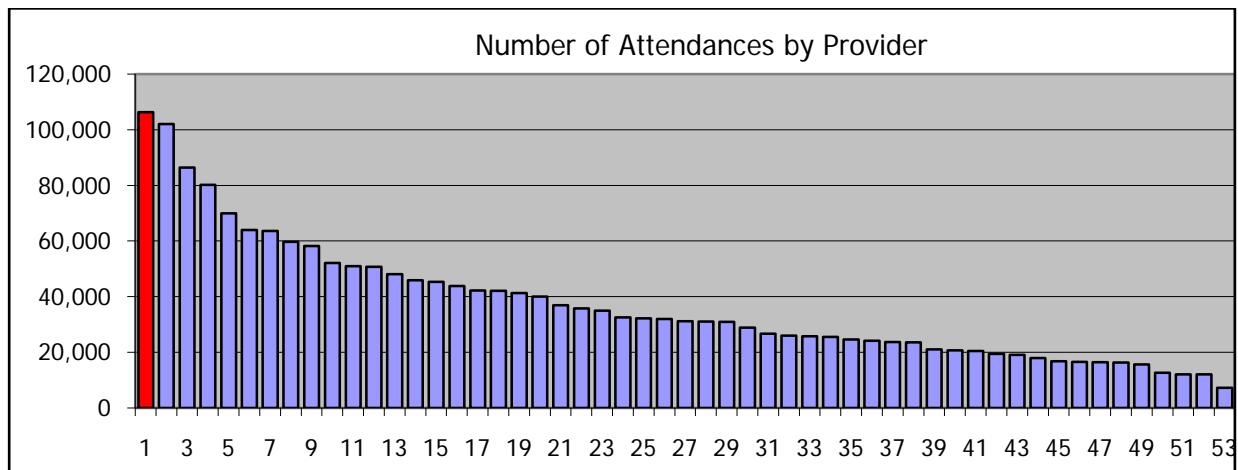
Current provision for Linear Accelerators is as follows across Scotland:

Diagram 05: Current Provision of Linear Accelerators across Scotland

Glasgow:	11 LinAcs
Edinburgh:	06 LinAcs
Dundee:	03 LinAcs
Aberdeen:	03 LinAcs
Inverness:	02 LinAcs

The BWoSCC is the busiest radiotherapy centre in the United Kingdom and is presently operating at close to maximum capacity. The graphs below illustrate the total number of radiotherapy attendances (fractions) and number of attendances per linear accelerator delivered in 2012/13 across UK departments submitting data returns to the UK Radiotherapy Dataset. Activity in Glasgow is shown in red.

Diagram 06: Total Radiotherapy Attendances and Fractions per linear accelerator 2012/ 13 in UK



This high level of activity is underpinned at this time through extended working across the existing stock of linear accelerators, with an average of 9.2 clinical hours per accelerator. Several accelerators operate 10.25 clinical hours per day. High levels of access are also required for specialised quality assurance testing, servicing and calibration undertaken by Physics staff outside of core clinical hours. This work ensures the accelerators continue to operate to their specification and that doses being delivered to patients remain at the right level. This is a particularly important safety aspect in delivering highly specialised planning techniques such as IMRT/VMAT, where higher doses may be delivered in smaller numbers of fractions eg. lung stereotactic ablative radiotherapy that is a now a standard protocol for patients in Glasgow.

The West of Scotland Regional Planning Group recognise that the activity modelling shows that a proposal for a Satellite Radiotherapy Facility to support West of Scotland radiotherapy services needs to be progressed as urgently as possible. The modelling carried out in the completion of the Central Belt scoping work demonstrated that at least 3 LinAcs would be required in the short term to meet the demand for radiotherapy services across Scotland with a minimum of 2 required for the West population; however this does not account for any growth in radiotherapy demand post 2017.

Discussions have taken place through the National Radiotherapy Programme Board regarding capacity issues and the Board accepts that there is a need for a strategic solution based on the Pathways and Processes work. This national group has agreed with the assumption that a satellite facility for the West needs developed.

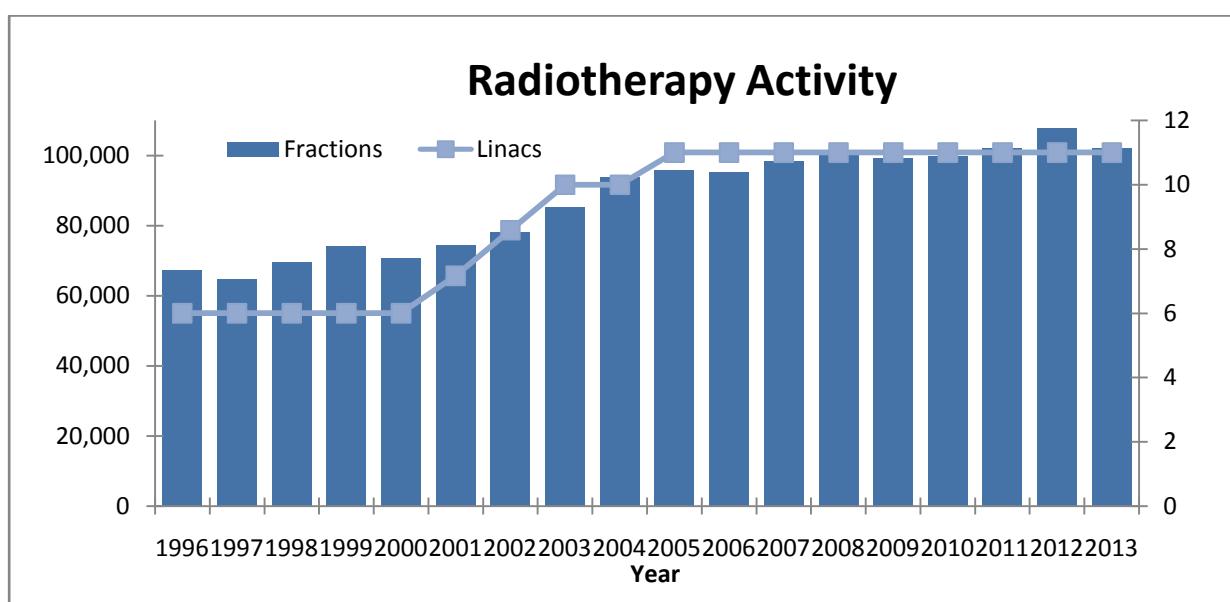
The National Radiotherapy Advisory Group (NRAG) Capacity and Efficiency subgroup reported in November 2006 that for utilisation rates of 85% or 8600 fractionations per LinAc that between 6.2 and 6.5 LinAcs would be required per million of the population. This

equates to a total of 14.88 to 15.6 LinAcs required to meet the needs of the West of Scotland population. Featherstone, Chalmers & Erridge reported in 2010 in their report on remodelling of radiotherapy demand and capacity data that there would be a requirement of between 114,000 and 155,000 fractionations required to meet the demands of the West of Scotland Cancer Network (WoSCAN) population by 2015. This equates to between 13 and 18 LinAcs for WoS.

2.7 Business Needs – Current and Future

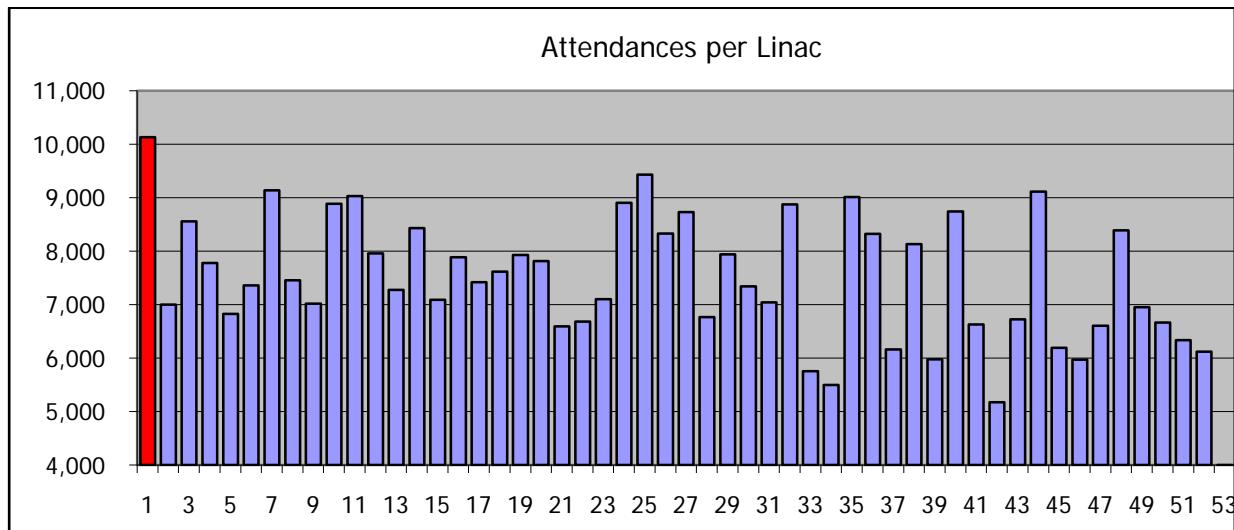
Radiotherapy activity levels have risen consistently over the last 15 years at the BWoSCC, in line with the additional capacity made available through the increase in the installed base of linear accelerators.

Diagram 07: Beatson Radiotherapy Activity



Comparison with other departments confirms that the accelerator workloads at the BWoSCC are operating around 35% higher than the UK average, with an average throughput of 10,100 attendances per accelerator. Accelerator utilisation rates can peak above 90%. The average across the UK is 7,450 fractions per accelerator as reported by the National Radiotherapy Dataset for 2012/13. The National Radiotherapy Implementation Group in England has recently reported that a throughput indicator of 7,300 attendances average across the department is in line with other countries, recognising that this was one of a number of benchmarks that should be considered.

Diagram 08: Comparison of Accelerator Workloads



The clinical radiotherapy casemix is detailed below for the last two years, by number of treatment fractions and patient numbers:

Table 11: Clinical Casemix

Year	2012				2013			
	Fractions		Patients		Fractions		Patients	
	Radical	Palliative	Radical	Palliative	Radical	Palliative	Radical	Palliative
Total	107,513		6,532		101,086		6,471	
	94,836	12,170	4,281	2,250	88,008	13,078	4,137	2,334
4 Tumour Groups	64,246	7,911	2,951	1,489	60,326	4,732	2,871	697
- Breast	31,184	1,401	1,696	298	31,578	264	1,754	47
- Prostate	20,414	969	648	255	16,947	210	539	30
- Lung	8,329	5,086	419	848	7,497	3,827	380	558
- Rectal	4,319	455	188	88	4,304	423	198	62

The anticipated benefit of advanced planning techniques delivered through VMAT technology is illustrated with the slight reduction in the average number of fraction per patient in the last year. As clinical confidence grows in the planning and delivering capabilities of this technology, fractionation schedules will shorten as seen with the implementation of VMAT RapidArc planning for head and neck, lung and prostate cancers in the last 18 months.

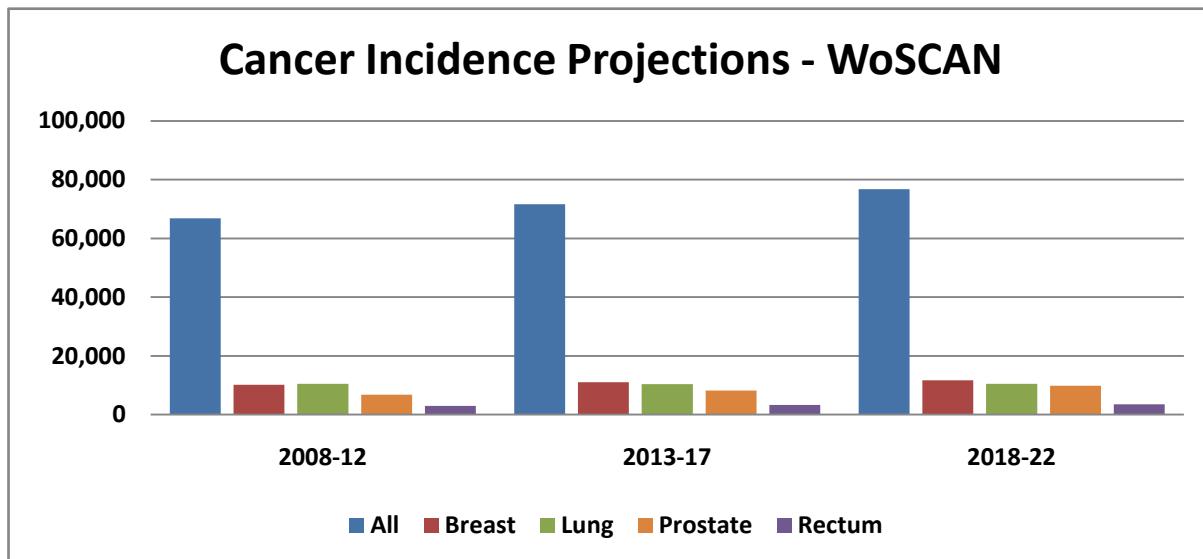
The clinical case mix that would be treated within the satellite radiotherapy facility has been identified as the following cancer sites:

- Breast
- Lung
- Prostate
- Rectal

These cancer sites have been chosen in order to maximise the impact on radiotherapy services whilst keeping the need for pathway redesign to a minimum. In total, these cancer sites account for 45% of all cancer incidences and take up approximately 70% of all radiotherapy activity.

Cancer incidence is projected to continue to rise across Scotland for the foreseeable future. The following graph illustrates the incidence projections published by Information Statistics Division (ISD) for the west of Scotland Cancer Network.

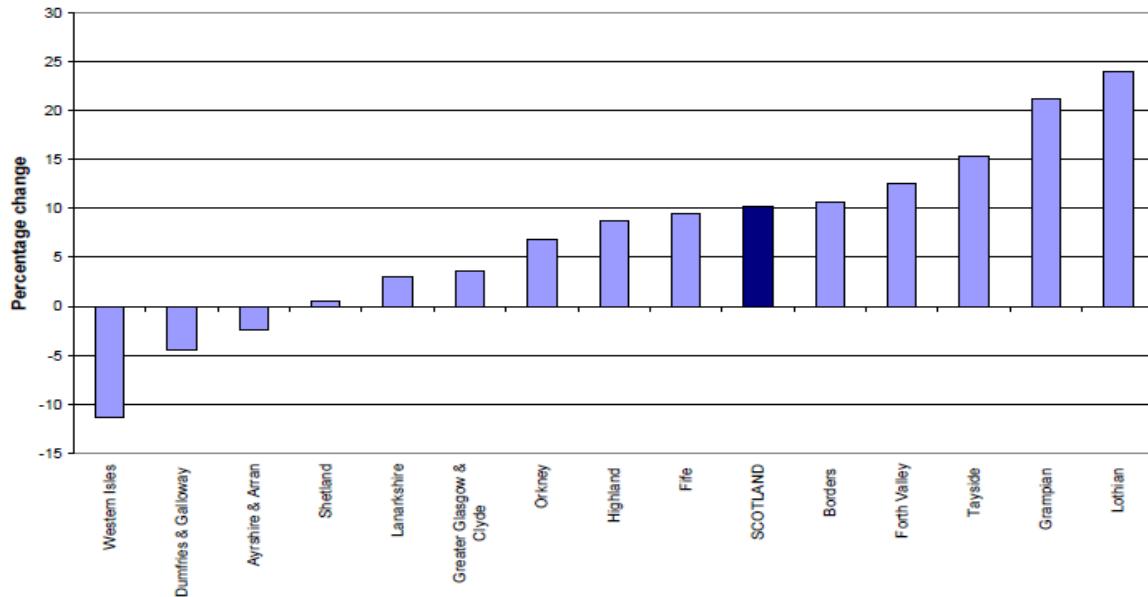
Diagram 09: WoSCAN Cancer Incidence Projections



A series of capacity and utilisation assumptions for radiotherapy treatment provision is shown at Appendix Ten which is in line with the assumptions used to inform the National Pathways work cited previously. It is estimated using these assumptions that the potential capacity of a 2 accelerator satellite facility is in the range of 17-18,000 fractions, assuming utilisation rate of 85-90% based on 4.5 fractionations per hour, rising to over 25,000 fractions with 3 operational linear accelerators.

Projected population data profiled over 5 and 10 year periods and collated from the General Registry Office (GRO) was reviewed and it was noted that for the West of Scotland (WoS) the populations of Lanarkshire and Glasgow were projected to increase similarly over the period with Forth Valley increasing ahead of the National percentage change.

Diagram 10: Projected % change in Population (2010 based) by NHS Board Area 2010-2035



Work has also been undertaken to model the capacity requirements in the next 5-10 years when potential population changes are taken into consideration and the relevant cancer incidence increases for the appropriate cancer networks are applied. As with all projected data there are limitations and at this point in time it is not possible to include any potential increase in populations of the datazones, however the cancer projections used collated from Information Services Division (ISD) projections took account of anticipated changes in the health board populations. This modelling showed that the population changes are expected to have little implications for the demand requirements for the locations considered in this work.

2.8 Agreed Scope/ Service Requirements

Building on the base modelling work which demonstrated that a site at Monklands would provide a greater capacity gain than Forth Valley, further analysis was made of the operational scope and service in terms of future capacity and demand for this location by 2016/2017, and the breakdown of activity on the BWoSCC and the satellite.

A series of assumptions were made including the projected cancer incidence rates, the anticipated fractionation schedules for the four clinical tumour sites, taking into account the estimated proportion of patients that would receive IMRT/VMAT planning and concomitant chemotherapy, and referral rates for radiotherapy. An allowance was made to consider the impact of detecting cancer early.

By 2016, this concluded that the minimum demand would be approximately 111,000 fractions per annum, with some benefit being found from the anticipated reduction in the fractionation schedule in the treatment of prostate cancer. The maximum demand would be approximately 122,000 fractions; this higher estimate assumes a higher proportion of uptake for radiotherapy than that at present and is considered to be a scenario that may take a longer period to take place.

Table 12: Predicted Radiotherapy Demand for West of Scotland

WoS Annual Cancer Incidence: 15,131		
	Fractions	Patients
Total	110,813	6,907
Radical	90,116	4,103
Palliative	20,697	2,804
4 Tumour Groups		
Total Radical	60,878	3,037
Lung	8,834	402
Breast	33,824	1,780
Prostate	12,642	632
Rectal	5,578	223
Total Palliative	7,871	1,537
Lung	4,266	853
Breast	1,751	314
Prostate	1,420	284
Rectal	434	86

An operational model for the satellite facility and the current BWoSCC was then developed, taking a demand of 110,000 fractions by 2016. This model assumed 11 linear accelerators at the BWoSCC with 2 accelerators operating at the satellite, generating a total of 27,973 treatment hours per annum between both sites. For purposes of modelling, an average throughput of 4.5 patients per hour was assumed, recognising that this would vary according to a range of parameters such as type of equipment, treatment technique and plan complexity. An utilisation rate of 90% was applied.

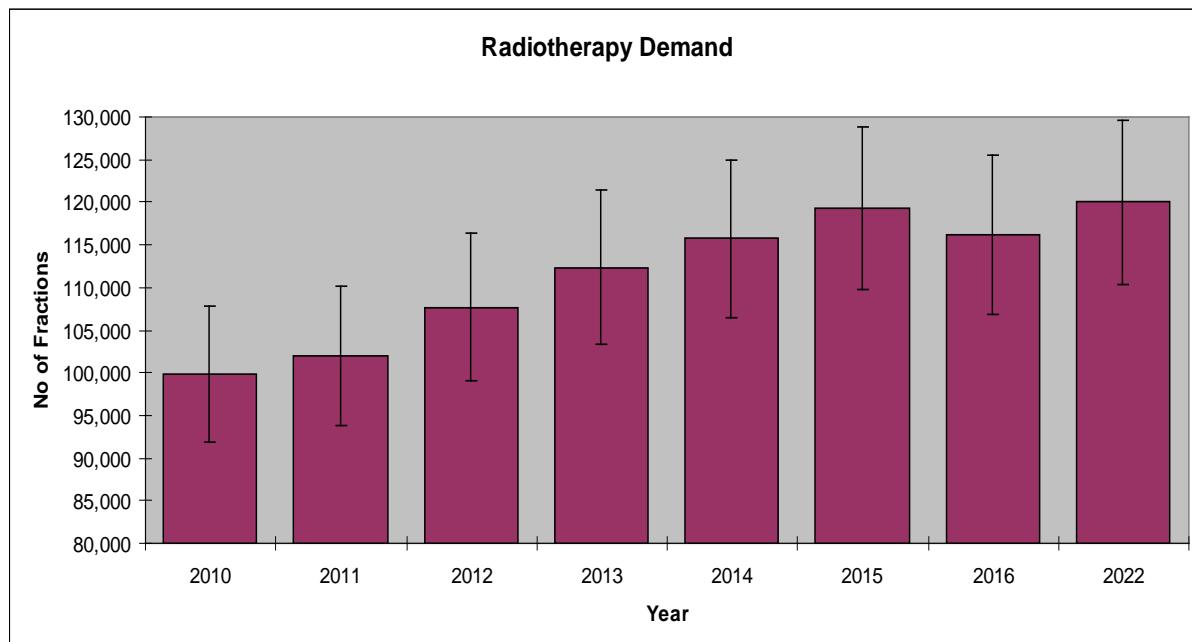
This would create a capacity to deliver over 113,000 fractions per annum, with 95,000 fractions at the BWoSCC and 18,000 at the satellite. The breakdown by tumour group is detailed below:

Table 13: Breakdown by Tumour Group

Site	Clinical Hours		Capacity (Fractions)	
	Beatson	Monklands	Beatson	Monklands
Beatson	23,473		95,066	
Monklands	4,500		18,225	
Total	27,973		113,291	
Tumour Group	Intent	Capacity - Patients Nos		
		Beatson	Monklands	Total
Lung	Radical	301	100	401
	Palliative	640	213	853
Breast	Radical	1,303	477	1,780
	Palliative	230	84	314
Prostate	Radical	463	169	632
	Palliative	208	76	284
Rectal	Radical	163	60	223
	Palliative	63	23	86
Totals		3371	1202	4,573

Longer term projections have been estimated for the demand for radiotherapy in the West of Scotland up to 2022, as shown below:

Diagram 11: Radiotherapy Demand vs Number of Fractions



The overall trend for radiotherapy remains upwards in the coming years, although some potential benefit may be offered with the reduction in fractionation following the reporting of clinical trial data for prostate cancer expected in the next few years.

One of the main influences on these estimates is the percentage uptake of radiotherapy, which is currently lower than that predicted. It has previously been reported that in Scotland, this figure is around 43% set against an average optimum rate of 50-52%. There will also be an influence on uptake with the introduction of new radiotherapy techniques that could not previously be delivered, that provide reductions in morbidity. This opens the opportunity for some current areas of unmet medical need to be delivered through advanced radiotherapy. Good examples of this are non-small cell lung cancer, locally advanced pancreas cancer and cholangiocarcinoma. This will lead to modest increase in radiotherapy demand if the trials prove of clinical benefit.

In addition, there is evidence that the uptake of radiotherapy treatment by patients diminishes with the distance travelled by patients to reach a radiotherapy centre. The provision of a satellite facility will, through the course of time, provide improved access to patients, as their travel time is reduced. As the population ages, this should ensure that as many patients as possible can access the relevant treatment.

In the years ahead, there may be opportunities for using reduced fractionation in both breast and prostate cancers (hypofractionation), both of which are high volume sites that place a high demand on radiotherapy services. Shorter fractionation schemes provide advantages in fewer visits by patients and an overall lower number of fractions but increases the accuracy and specification of the planning and dosimetric delivery of the treatments, where the larger doses are prescribed. The demands for high quality treatment planning will rise as more patients can be treated, while the requirements for accurate patient setup and imaging at the time of treatment will be a key component. It is predicted that the number of treatments delivered per hour may be less but this is more than balanced by the increased cohort of patients who can be treated with fewer fractions needed per patient.

Various clinical trials for hypofractionation treatments are planned that will explore these potential opportunities although it is unlikely these will be seen in routine clinical use until five to seven years hence, assuming the benefit is proven to be clinically efficacious and safe.

These predictors strongly suggest that over the coming years, the demand for radiotherapy will continue to rise and require sufficient and resilient capacity to be made available.

With an operational capacity of around 113,000 fractions per annum with a two linear accelerator radiotherapy facility, initial demand assumptions may be met but taking into account the above considerations, this development would provide a 3 bunker facility to provide an effective infrastructure to enable future expansion for additional linear accelerators.

The ambition for the West of Scotland would be to have fourteen linear accelerators in clinical use across the two sites, with eleven at the BWoSCC and three at the satellite facility.

2.8.1 Physical Constraints

Wherever treatment planning is undertaken, sufficient office and workstation space will be required to accommodate the additional staff involved in the treatment planning of those patients to be treated at the satellite facility. This would include Physics staff in treatment planning itself but would also include the Oncologists and Therapy Radiographers along with all the necessary facilities for clinical assessment and treatment.

2.8.2 Service Provision

Service provision will include the ability to carry out treatment planning and CT Simulation, which will be an integral feature of this new service.

Work carried out by the Steering Group for the IA made an early decision to include treatment planning within the footprint for any satellite facility. The Group considered that in the light of advances in treatment planning techniques, the additional space requirement for Physics staff and also Oncologists, Oncology Nurses and Therapy Radiographers was an essential part of safe service delivery. The additional space requirements are relatively minimal and the safety gains are significant.

The Royal College of Radiologists stated in 2004's 'Guidance on the Development and Management of Devolved Radiotherapy Services' that technical standards must be high in the provision of any devolved radiotherapy service and provision should be made for advanced planning techniques including intensity modulated radiotherapy (IMRT). Within the next two years, it is estimated that a larger proportion of radical patients will receive IMRT and by the opening of a new facility, this will be the accepted standard of radiotherapy for many tumour groups. Already, over 75% of radical patients receive IMRT at the Beatson, and these techniques will be available as required to patients at the Satellite Facility.

Various models have been applied in the provision of Physics treatment planning facilities within satellite centres. In Canada and Australia, the approach has been to make provision for Physics staff at the devolved facility. The benefits to be gained from having appropriate Physics staffing on-site are extensive, including the ability to react at short notice and provide specialist advice on individual patient's treatment plans. Adjustment to a plan is often required both after it is prepared and before treatment commences or following on-treatment imaging. The risk of any misinterpretation or information being overlooked is minimised when Physics treatment planning staff are available on-site where direct communication can take place or indeed, the patient and their plan setup is examined directly on the accelerator. This makes it essential to have radiotherapy planning on the delivery site.

2.8.3 CT Simulation

A CT Simulator will be required to support the treatment capacity to be delivered in the satellite facility. In the West of Scotland treatment centre at the Beatson, there are currently 3 CTs and one conventional Simulator for the 11 accelerators. The average CT Simulator scans 200 patient sessions per month. Assuming a patient workload of 1,750, the satellite facility would require around 2,000 scans per year equating to an utilisation of around 80% for one CT.

2.8.4 Concomitant Chemotherapy

The use of concomitant chemotherapy along with external beam radiotherapy is established as standard in certain patients with rectal, lung and bladder cancers. In order to enable this treatment pharmacy facilities must be available to provide, formulate and deliver appropriate chemotherapy to these patient groups. Rectal cancer patients often receive oral chemotherapy but bladder and lung patients require IV chemotherapy, sometimes delivered by a 24 hr pump device. This type of therapy will require careful scheduling and planning in order to guarantee safe and efficient delivery. Currently all patients receiving concomitant therapy are treated at the BWoSCC utilising the native pharmacy service. Any patients treated at the satellite facility will need similar support from Monklands pharmacy.

Pharmacy costs for Concomitant Chemotherapy have been included within the revenue costs shown throughout this FBC.

2.9 Benefits Criteria

This section describes the criteria established as being optimal to support a satellite radiotherapy facility, the core elements within each and how these will be realised:

Table 14: Benefits Criteria

Benefit	Definition	Core Elements	How Realised	How Measured
Clinical Benefit	Having access to the full range of services required to support patients attending a satellite radiotherapy facility.	<ul style="list-style-type: none"> Access to high quality radiotherapy services with ability to target the tumour while reducing normal tissue exposure and reducing treatment delivery times Access also to Pharmacy including Chemotherapy, ITU and A&E if required. Access to radiology services including MRI. Access to biochemistry, haematology/bacteriology services as required. Future provision for access to MRI facilities for planning. 	<ul style="list-style-type: none"> State of the art equipment in the satellite Provision of modern treatment planning and treatment techniques Facilities on site at Monklands Hospital MRI on site but would need future business case if a service development for planning is considered appropriate 	<ul style="list-style-type: none"> Procurement strategy for LinAcs/ CT and other radiotherapy equipment which delivers the most modern kit Ability of the Satellite to provide radiotherapy to the defined catchment population Ability of support services within Monklands to provide clinical services to all patients attending the Satellite Analyse the levels of uptakes by distance from the Satellite by patient demographic before and after Facility is operational
Patient Access	The number of patients from the target radiotherapy treatment populations who benefit in terms of being closer to the new location than to existing treatment sites.	<ul style="list-style-type: none"> The number of patients and carers able to travel to the satellite facility quicker than to the Beatson while also freeing capacity at the parent (Beatson) site. Improvement in access to RT for the specified incident population Availability of car parking facilities Alternative public transport 	<ul style="list-style-type: none"> Postcode sector analysis per tumour site and patient flow analysis Capacity and demand review Allocation of Lanarkshire postcodes to centre Improved journey times Increased access to voluntary transport Close proximity of bus and train 	<ul style="list-style-type: none"> Actual travel distances between postcode sectors to the Satellite compared to travel distances to Gartnavel General Hospital All patients within the defined catchment area and tumour types being seen/treated within current standards (cancer target times) Lanarkshire

		availability e.g. bus and rail	<ul style="list-style-type: none"> services Improved access by demographics Improved car parking 	<ul style="list-style-type: none"> Cancer Care Trust will report current vs previous capacity as a result of reduced travel distances Conduct travel survey for patients and compare results with current experience Survey patient experience of parking at Monklands site
Strategic Fit	The extent to which the satellite facility improves the current and future capacity in the West of Scotland and relieves capacity pressure on existing Beatson Centre in the medium term i.e. 5-10 years	<ul style="list-style-type: none"> The additional number of fractionations able to be delivered across the West of Scotland The ability to expand from a 2 LinAc facility to a 3 LinAc facility The impact on service provision of the current cancer centres Wider associated benefits including equality of access, local hospital development and clinical expertise, educational and teaching developments and ability to support service development & research 	<ul style="list-style-type: none"> Provision of additional capacity at an agreed throughput If required, submit business case for extension to a 3 LinAc unit Reduced demand at the Beatson West of Scotland Cancer Centre Improved access across all deprivation categories Positive benefit to hospital development and clinical community 	<ul style="list-style-type: none"> Compare total number of patients / fractions for satellite and BWoSCC If appropriate, develop a business case for an additional linear accelerator for the satellite within the 3rd bunker. Monitor activity, demand and capacity in both radiotherapy locations per deprivation category Lanarkshire and GGC clinicians and managers identify where better multidisciplinary teamwork has been achieved through location of satellite in Lanarkshire

Site Logistics	The extent to which the building meets a range of factors with regard to its impact on both the patient journey and the physical site.	<ul style="list-style-type: none"> • Distinctive and Unique • Intimacy • Landscape setting • Pedestrian Accessibility • Car Accessibility • Connectivity • Town Planning Impact • Buildability • Infrastructure 	<ul style="list-style-type: none"> • External and internal building design and landscaping • Engagement of patients and staff in planning design finishes and furnishings • Access arrangements for pedestrians and cars • Link corridor to main hospital • Planning consent and local authority support • Feasibility of build • Services on site • Wayfinding Plan 	<ul style="list-style-type: none"> • Post Project Evaluation will compare the building and facilities to the design statement and supporting documentation • Evidence of staff and patient contribution to design through attendance at workshops and meetings • Involvement of cancer charities through attendance at workshops and meetings • Local authority approval through granting statutory applications • Survey of patients and staff through Post Project Evaluation to establish whether the Satellite has met their needs • Survey of patients and staff through Post Project Evaluation to establish whether local services/ accessibility has met their needs
Staffing	The impact of opening a Satellite Facility on staff from both the Current Facility and New Facility perspective	<ul style="list-style-type: none"> • Ability to staff and bring into operation • Accessibility (eg. transport, parking) and amenities for staff • Ability to encourage recruitment & retention • Education facilities 	<ul style="list-style-type: none"> • Workforce plan and change plan • Developed HR Strategy • Bus/ Train service and parking proximity • Access to hospital facilities for staff and staff facilities within satellite 	<ul style="list-style-type: none"> • Ability to fully recruit to workforce plan inclusive of vacancy levels and sickness/ absence rates • Survey staff travel arrangements • Survey staff through Post Project Evaluation to establish whether in house and on site staff facilities have met their needs

				<ul style="list-style-type: none"> • Survey staff use of in house and on site education facilities through Post Project Evaluation to establish whether the Satellite has met their needs
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2.10 Strategic Risks

The main project risks and mitigation factors carried through to this FBC were identified at a high level at the IA stage. The Strategic Risks were presented under two main categories:

- Business
- Service

Table 15: Strategic Risks

Risk Category	Description	Mitigation
Business Risks		
	Financial	Clear and comprehensive business case and procurement process
	Political	<p>Encompass current legislation and adherence to strategies and key programmes.</p> <p>Early engagement with Scottish Government and West of Scotland Health Boards colleagues.</p>
	Environmental	Early sustainability briefing
	Strategic	Adherence to National Policies and guidelines
	Quality	Detailed briefing and monitoring ensuring alignment with the three pillars of the Quality Strategy i.e the safe provision of service, Care is Patient Centered and Clinically Effective

	Procurement Method	Clear and comprehensive review and consideration of all appropriate and available procurement routes
	Funding	Clear and comprehensive business case close dialogue with SGHSCD and West of Scotland Boards
	Organisational	Effective communication and co-ordination of progress and emerging issues via Health Board representativeson Regional Planning Group, staff and patient representatives.
Service Risks		
	Workforce	Staff engaged as stakeholders
	Technical	Employ strict change control management processes
	Programming	Plan and monitor with reference to an early warning strategy and develop a commisioning programme
	Operational Support	Manage staff and service user input effectively
	Quality	Detailed briefing & monitoring of design reflecting the Design Statement together with the use of AEDET evaluation tool. Achieving the Quality Strategy ambitions

At the OBC stage the risks were formalised into a risk register capturing individual risks within each strategic category. The format of the risk register follows the guidance set in the Scottish Capital Investment Manual (SCIM) and has been formatted as per the guidance provided in the NHS Health Improvement Standards (NHS HIS).

The initial project risk register was established at a Project Team Risk Workshop which was attended by a wide audience comprising workgroup representatives from Clinical and Patient Groups, PSCP, NHS GG&C and NHSL. Each sub group associated with the project has continued to feed issues into the Master Register.

The NHS Quality Improvement Scotland (QIS) assessment matrices have been used for the scoring of risks. This allows for four categories of risk, identified as follows:

Table 16: HIS Rating

Rating = Severity x Likelihood	
Very High	20 - 25
High	10 - 16
Medium	4 - 9
Low	0 - 3

Table 17: Impact/ Likelihood

Likelihood	Impact/ Consequence				
	Negligible	Minor	Moderate	Major	Extreme
Almost Certain	Medium	High	High	V High	V High
Likely	Medium	Medium	High	High	V High
Possible	Low	Medium	Medium	High	High
Unlikely	Low	Medium	Medium	Medium	High
Rare	Low	Low	Low	Medium	Medium

Pre- Mitigation and Post- Mitigation scores have been included on the Risk Register with an agreed Mitigation strategy. The table below highlights the current risk profile:

Table 18: Risk Summary

Risk Level	Total Number of Risks per Risk Level (Pre- Mitigation)	Total Number of Risks per Risk Level (Post- Mitigation)
Very High	0	0
High	12	7
Medium	42	32
Low	7	22

Project Risk has been managed through the FBC process via Technical and Core Group Meetings where methods of mitigating and managing the risks have been agreed, allocating responsibility and closing out and modifying risks that remain as appropriate.

The management of the Register has been a dynamic process which has allowed risks to be continuously added as well as closed out. The addition of construction risks appropriate to the FBC stage has bolstered the total number of items on the Master Register when compared to the total of the OBC.

High Level Risk has been consistently highlighted and discussed at monthly Project Board meetings, ensuring governance at the highest level of the Project. The addition of new 'high' risks and changes to existing 'high' risks has also been highlighted to the Regional Planning Group at their bi- monthly meetings.

2.11 Constraints and Dependencies

There are a number of constraints and dependencies associated with the project. The primary constraint is the granting of Scottish Government approval to fund the project. The project would be unable to proceed if this could not be achieved.

With the approval of the OBC, support to proceed to this FBC has been received from Scottish Government.

There is a land constraint present due to the existing hospital buildings that surround the site and the physical footprint of the facility which will require careful planning by the PSCP ahead of construction beginning.

There are a number of dependencies associated with the project, these being:

- Requirement for adjacent hospital services i.e. Chemotherapy, ITU, MRI, Acute Services
- Requirement to provide similar clinical functions and models as the Beatson
- Network Link to the Beatson
- Staffing rotation and recruitment
- Paperlite operation

3 Economic Case

3.1 Introduction

In accordance with the Scottish Capital Investment Manual and the requirements of HM Treasury's Green Book (A Guide to Appraisal in the Public Sector), this section of the FBC documents the process and provides evidence provided in the OBC to show that the selection of the preferred option was derived from the most economically advantageous option whilst best meeting the service needs and optimising value for money.

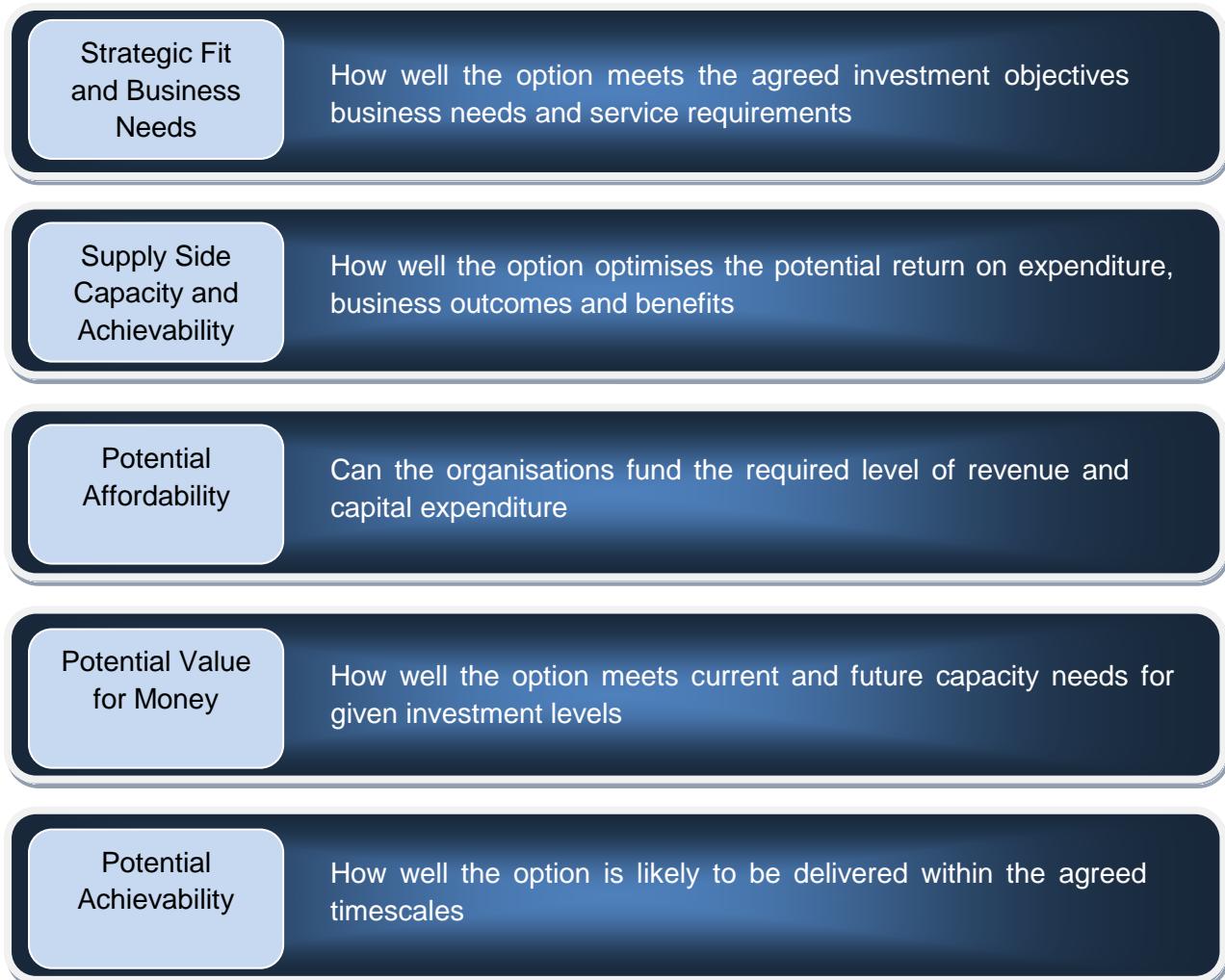
The Economic Case sets out:

- Critical Success Factors;
- Long Listed Options;
- Preferred Way Forward
- Short Listed Options;
- Economic Appraisal;
- Qualitative Benefits Appraisal;
- Risk Appraisal;
- Sensitivity Analysis;
- Preferred Option

3.2 Critical Success Factors

The following Critical Success Factors (CSFs) have been identified as attributes essential to the successful delivery of the project. The CSF's are used in conjunction with the investment objectives to evaluate the Long List of possible options:

Diagram 12: Critical Success Factors



3.3 Main Business Options

At the outset of the IA a number of different options were considered nationally and regionally to help resolve the recognised constraints on radiotherapy provision across Scotland. The Central Scotland Satellite Radiotherapy Scoping Work detailed the investigation of a solution which would support acknowledged constraints on service provision within the West of Scotland.

The following details the Long List of Options, which was considered as part of the Central Scotland scoping work in meeting the needs of a West of Scotland population:

Diagram 13: Long List of Options

- Maintain Status Quo
- Extend BWoSCC
- Extend Edinburgh Cancer Centre
- Build Satellite Radiotherapy facility in Forth Valley Royal Hospital
- Build Satellite Radiotherapy facility in Hairmyres Hospital
- Build Satellite Radiotherapy facility in Monklands District General Hospital
- Build Satellite Radiotherapy facility in St. John's Hospital
- Build Satellite Radiotherapy facility in Wishaw General Hospital
- Build Satellite Radiotherapy facility in Crosshouse Hospital

In response to this consideration, the following was established:

The Central Belt work demonstrated that a central location does not provide sufficient relief to the main cancer centres and separate solutions are required to resolve each region's current and future capacity difficulties.

Maintaining the Status Quo is not an option as the BWoSCC is currently operating at full capacity. Secondly, the centre is already significantly bigger than other major centres and to increase further would potentially increase the risks to the safety and quality of service provision.

Extension to the current regional cancer centres was considered but quickly assessed as non viable due to a lack of available space.

The Edinburgh Cancer Centre is landlocked and does not have the available footprint to enable it to increase its capacity. Secondly, even if these capacity constraints could be resolved at the Edinburgh Cancer Centre this would not provide the required relief to the existing capacity constraints present at the BWoSCC.

St. John's Hospital would not provide the required relief to the existing capacity constraints at the BWoSCC. It was established that within a 30 minute travelling time only 0.2 LinAc demand would be removed from the BWoSCC, which is insufficient to meet the pressing needs of the centre.

NHS Ayrshire & Arran, NHS Forth Valley and NHS Lanarkshire were invited to submit notes of interest in hosting a proposed West of Scotland satellite radiotherapy facility and all indicated interest, however it became apparent on closer inspection that the sites at Wishaw, Hairmyres and Crosshouse could not provide the necessary footprint required to accommodate the Facility and its potential future expansion.

3.4 Preferred Way Forward

Throughout the IA and OBC process all appropriate funding and procurement options were considered including NPD. Based on the indicative costs identified, it was noted that after stripping out the large equipment element, the remaining construction costs were circa £16m. As detailed in SCIM, the de minimus level for considering whether projects are suitable for NPD is £20m. Consequently the guidance contained within SCIM has been followed i.e. the default procurement route for any acute construction projects not suitable for NPD is Frameworks Scotland. Given the regional nature of the project it was felt at OBC stage that national capital as opposed to local would be the most appropriate funding vehicle to be explored and this continues to be the preferred way forward at FBC.

3.5 The Short Listed Options

Following a review of the Long List of Options against the established criteria and investment objectives Lanarkshire Health Board put forward Monklands District General Hospital as the sole possible site to host this proposed facility within their Health Board. A number of positions were initially identified for the facility, with a subsequent site appraisal highlighting the former Health Centre site as the preferred option.

It was concluded that neither Hairmyres Hospital nor Wishaw General Hospital had a sufficiently large physical footprint to host the facility. Moreover Wishaw General was geographically not in the ideal position to host a West of Scotland Facility and serve the catchment population.

NHS Forth Valley identified four potential sites at Forth Valley Royal Hospital, and subsequent to the IA submission, further site appraisal identified site 'D' as the most suitable.

Similar to the issues at Hairmyres Hospital and Wishaw General Hospital, NHS Ayrshire & Arran does not have the required footprint to host a facility at Crosshouse Hospital and although other sites in NHS Ayrshire & Arran do, travel time to the site and the access to clinical adjacencies seen as necessary to support radiotherapy service provision are not currently available and difficult to provide in the future.

The following Short List of options was taken forward for appraisal at OBC stage:

Diagram 14: Short List of Options

- Maintain Status Quo
- NHS Lanarkshire - Monklands District General Hospital
- NHS Forth Valley - Forth Valley Royal Hospital

3.6 NPC/ NPV Findings

This section presents the economic appraisal of the shortlisted options and incorporates key elements of the Capital and Revenue implications of each which have been assessed over the anticipated life of the project and discounted to derive a Net Present Cost (NPC) for each viable option.

3.6.1 Capital Costs

There would be no capital costs associated with maintaining the status quo and no material backlog costs have been identified within the current radiotherapy facilities at the BWoSCC. As noted within the 'Main Business Options' section of this document, maintaining the status quo is not a viable option as the BWoSCC is currently operating at near to full capacity and, as the existing centre is already significantly larger than other major centres, further expansion would increase the risks to the safety and quality of service provision. The Initial Agreement identified that the costs of siting the satellite facility at Monklands District General Hospital or Forth Valley Royal Hospital, would be in the range £23.3m to £24.5m.

Since approval of the Initial Agreement and engagement of the Principal Supply Chain Partner and Project Management and Cost Advisors, further work has been undertaken in assessing the available sites and the design aspects of the proposed facility. This work identified one viable site at Forth Valley Royal Hospital in Larbert and the site of the former Airdrie Health Centre at Monklands District General Hospital.

At OBC stage, the forecast capital costs for the sites were summarised in the Table below.

Table 19: Forecast OBC Capital Costs

<u>Capital Costs</u>	<u>Monklands District General Hospital</u>	<u>Forth Valley Royal Hospital</u>
Building capital cost	£8,335,247	£8,335,247
Externals, Piling, Services, Landscaping costs	£678,635	£854,835
Non Works Costs	£60,000	£60,000
Fees	£1,728,457	£1,762,816
Equipment	£5,750,000	£5,750,000
Quantified Risk Allowance	£1,324,187	£1,341,032
	£17,876,526	£18,103,930
VAT	20% £3,575,305	£3,620,786
	<u>£21,451,831</u>	<u>£21,724,716</u>

The forecast phasing of this expenditure at OBC is noted in the Table below:

Table 20: Indicative OBC Spend Profiles

<u>Indicative Capital Spend Profile</u>	<u>2013/14</u>	<u>2014 /15</u>	<u>2015 /16</u>	<u>TOTALS</u>
	<u>£'000</u>	<u>£'000</u>	<u>£'000</u>	<u>£'000</u>
Monklands District General Hospital	£532	£9,280	£11,640	£21,452
Forth Valley Royal Hospital	£539	£9,398	£11,788	£21,725

3.6.2 Revenue Costs

Work undertaken to develop the scheme to OBC stage resulted in the following position for Revenue Costs:

Table 21: Revenue Costs

	<u>Monklands District General Hospital</u>	<u>Forth Valley Royal Hospital</u>
<u>Pay Costs</u>		
Medical Staff	£387,200.00	£387,200.00
Medical Physics Staff	£634,400.00	£634,400.00
Therapy Radiography Staff	£823,300.00	£823,300.00
Mould Room Staff	£105,400.00	£105,400.00
Nursing Staff	£158,200.00	£158,200.00
Administration & Clerical Staff	£73,800.00	£73,800.00
Total Staff Costs	<u>£2,182,300.00</u>	<u>£2,182,300.00</u>
<u>Non Pay Costs</u>		
AHP Services	£136,500.00	£136,500.00
Hotel Services	£86,900.00	£49,200.00
Facilities & Estates	£200,700.00	£168,400.00
HI&T	£16,200.00	£16,200.00
Specialised Radiotherapy Services	£317,300.00	£348,500.00
Other non Pay Costs	£12,900.00	£20,600.00
Depreciation	£1,223,500.00	£1,230,322.00
Total Non Pay Costs	<u>£1,994,000.00</u>	<u>£1,969,722.00</u>
TOTAL PAY & NON PAY COSTS	<u>£4,176,300.00</u>	<u>£4,152,022.00</u>

3.6.3 Lifecycle Costs

Indicative Lifecycle costs for the new facility were estimated by the Cost Advisors and incorporated into the economic appraisal when calculating the net present costs of both the proposed viable sites.

3.6.4 Net Present Cost (NPC)

The resultant Net Present Costs for each viable option were summarised in the table below:

Table 22: Net Present Cost and Ranking

	Net Present Cost	NPC Rank
	£'000	
Monklands District General Hospital	£75,020	2
Forth Valley Royal Hospital	£74,719	1

3.7 Benefits Appraisal

A Non- Financial Benefits Appraisal Workshop was undertaken on 15th April 2013 at the Medical Education Training Centre, Kirklands Hospital to explore and examine the short listed options and to inform the development of the preferred option for the Facility. A group of stakeholders comprising clinical departmental staff and representatives of each Health Board participated along with PSCP presence to ensure a consistent approach and appropriate technical input was available. The Short List of Options presented for appraisal on the day was as follows:

Diagram 15: Short List of Options

- Maintain Status Quo
- NHS Lanarkshire - Monklands District General Hospital
- NHS Forth Valley - Forth Valley Royal Hospital

The full detail of the Workshop can be reviewed in Appendix Eleven.

3.8 Risk Assessment

Continual risk analysis has been ongoing to identify and assess the impact of all risks during the stages of the project.

The Master Risk Register has been continuously updated and reviewed throughout the course of the Project with the various workgroups feeding pertinent Risks in to the Master Register on a regular basis. An update on the high risks is discussed at the Core Group Meetings and the Project Board is kept informed of the highest scoring risks via their Project Board Meeting.

Further details of the approach taken to Risk Management in moving towards Full Business Case are documented within Section 2.10 and Section 6.

3.9 Preferred Option

The preferred option in terms of non-financial benefits appraisal at OBC Stage was identified as the Monklands site, as can be seen from the table below.

Table 23: Non-Financial Ranking

	option	weighted score	ranking
1	Status Quo	230	3
2	Monklands	390	1
3	Forth Valley	290	2

Under Sensitivity Analysis, the Monklands option ranked consistently as highest of the three options under each scenario.

Table 24: Non-Financial Sensitivity Ranking

	option	Equal Weight		Remove B&C Scores		Alter C to '3'	
		weighted score	ranking	weighted score	ranking	weighted score	ranking
1	Status Quo	260	3	140	2	290	2
2	Monklands	400	1	150	1	360	1
3	Forth Valley	320	2	140	2	290	2

The NPC was used in conjunction with the scoring obtained during the non-financial appraisal workshop to calculate the NPC per benefit point in order to rank the viable options. The final outcomes are summarised in the table below:

3.9.1 Summary of Net Present Costs, Benefit Points and Rankings

Table 25: Summary of Financial and Non-Financial Rankings

	Net Present Cost	NPC Rank	Benefit Point	Benefit Point Rank	NPC per Benefit Point	Overall Rank
	£'000				£	
Monklands District General Hospital	£75,020	2	390	1	£192	1
Forth Valley Royal Hospital	£74,719	1	290	2	£258	2

3.10 Sensitivity Analysis

At OBC stage, sensitivity analysis was undertaken to assess to what degree the key estimates would need to change in order to alter the investment decision. Consequently sensitivities were performed in order to understand how much each of the key cost components relating to Capital and Revenue costs (excluding VAT) would need to change in order to reverse the rankings of the two viable sites.

The outcomes of the sensitivities demonstrated the following:

3.10.1 Sensitivity Analysis in respect of Net Present Cost

It was identified that both options had a similar level of Net Present Cost, with Forth Valley Royal Hospital having a slightly lower NPC than Monklands District General Hospital. However sensitivity analysis showed that only a relatively small change in either of the key variables would result in a reversal of these positions as follows:

The Capital Cost of the Forth Valley Royal Hospital Option would require increasing by £362K (2%) (excl VAT) in order to affect the final Net Present Cost to the extent that the final NPC exceeds the figure of £75,020K shown above for Monklands District General Hospital.

The annual Revenue Costs of the Forth Valley Royal Hospital Option would require increasing by £28K (1%) (excl VAT) per annum in order to affect the final Net Present Cost to the extent that the final NPC exceeds the figure of £75,020K shown above for Monklands District General Hospital.

3.10.2 Sensitivity Analysis in respect of Net Present Cost per Benefit Point

It was further identified that Monklands District General Hospital had the lowest Net Present Cost per Benefit Point. As a result of the outcome of the non-financial appraisal, sensitivity analysis demonstrated that substantial movements would be required in the key financial estimates to alter the overall rankings when identifying the preferred option, as noted below:

The Capital Cost of the Monklands District General Hospital Option would require increasing by £26,994m (151%) (excl. VAT) in order to affect the final Net Present Cost to the extent that the final NPC per benefit point exceeds the figure of £258 shown above for Forth Valley Royal Hospital.

The annual Revenue Costs of the Monklands District General Hospital Option would require increasing by £1.299m (46%) (excl. VAT) per annum in order to affect the final Net Present Cost to the extent that the final NPC per benefit point exceeds the figure of £258 shown above for Forth Valley Royal Hospital.

The nature of the development meant that the majority of all costs forming part of the key estimates were common across both options, the likelihood of any such cost increases applying solely to one option and not both is deemed to be remote.

The result of both the non-financial and financial appraisals, confirmed through subsequent sensitivity analysis, determined that the preferred option was to site the proposed Satellite Radiotherapy Facility at Monklands District General Hospital.

4 The Commercial Case

4.1 Introduction

This section of the FBC outlines the commercial transaction that the board will sign up to and will consider the following:

- The scope of the services being contracted for
- The management and allocation of risk
- Potential charging mechanism
- Key contractual arrangements
- Personnel implications
- Implementation timescales
- Accountancy treatment

4.2 Agreed Scope and Services

The services to be included within the Satellite Radiotherapy Facility can be seen below:

Diagram 16: Radiotherapy Satellite Facility Services

- Treatment Suite
- CT Simulation
- Physics Support including Treatment Planning
- Mould Room
- On-treatment review
- Concurrent Chemotherapy

The Satellite Radiotherapy Facility will be provided under Frameworks Scotland and as such the Capital Funding is anticipated to be provided by the Scottish Government.

4.2.1 Financial Governance

Clinical services and major medical equipment for the satellite (table 33) will be provided by NHS GG&C, with costs re-allocated to WoS Boards using established formulae.

Models exist for the financial governance of facilities which provide services to more than one NHS Board (e.g. WoS Laundry), and for a third party providing facilities for clinical services being delivered by an NHS Board (e.g. PFI hospitals).

Using learning from these examples, it is proposed that a trading account will be established by the Host Board which will capture the non-clinical service elements. The performance reports for this account will be reported to Regional Cancer Advisory Group (RCAG) and costs re-allocated to the WoS Boards using existing, agreed proportions.

The following tables describe the various cost elements of the proposed Satellite Facility.

Table 26: Clinical services

Medical staffing	NHSGG&C employer. Included in workforce plan.
Radiography staffing	NHSGG&C employer. Included in workforce plan.
Nurse staffing	NHSGG&C employer. Included in workforce plan.
Physics staffing	NHSGG&C employer. Included in workforce plan.
Linear accelerator procurement, commissioning and maintenance	NHSGG&C Included in capital and revenue costing.
CT procurement, commissioning and	NHSGG&C

maintenance	Included in capital and revenue costing.
Minor medical equipment procurement, commissioning and maintenance.	NHSL. These items to be proportionately distributed to Boards through a Trading Account

Table 27: Clinical Services Support

Chaplaincy	To be integrated with Host Board services/procedures. No cost impact.
Control of Infection	SOP to be integrated with Host Board services/procedure. No cost impact.
Dentistry Physiotherapy Podiatry Occupational Therapy SALT	Not Applicable to the interventions/ treatment being delivered in the Facility
Dietetics Laboratories Pharmacy	To be integrated with Host Board services/procedures
Oncological Emergencies & Crash Team	Oncology Emergency SOP to be developed including hours of availability and cover provided by Oncology medical team Crash Team To be integrated with Host Board services/procedures. No cost impact.
Social Work Services	To be integrated with existing Board services/procedures

Table 28: Support Services

Catering	To be integrated with Host Board services/procedures May include vending machines. Patients' needs likely to be low level but to be confirmed and costed.
Clerical	Included in workforce schedule. Employer to be agreed by programme team.
Domestic Services	To be integrated with Host Board services/procedures
Estates/Maintenance	To be integrated with Host Board services/procedures
Laundry/Linen	To be integrated with Host Board services/procedures
Portering Services	To be integrated with Host Board services/procedures
Purchasing	Local cost centre and cost centre allocated in Glasgow for specialist purchases Systems to be confirmed.
Security	To be integrated with Host Board services/procedures
Waste Disposal	To be integrated with Host Board services/procedures

Table 29: Facility Management & Administration

Clinical Governance	SOP and reporting arrangements to be agreed between Host Board and NHS GG&C.
IM&T	To be integrated with Host Board services/procedures
Education and Learning	Principally managed by GG&C for radiotherapy related education and training.
Fire Safety	To be integrated with Host Board services/procedures
Health & Safety	SOP and reporting arrangements to be agreed between Host Board and NHS GG&C.
Health Records	Further consideration required to establish how case records will be made available (electronically and/or hard copy)
On call	N/A, M-F daytime working only.
Radiation / IRMER Policies	Single set of IRMER procedures to be implemented extending existing NHGG&C / Beatson arrangements Entitlement will be made as per current arrangements via NHSGG&C system irrespective of staff's employer as advised by

	HPA. IRR99 obligations to be allocated between Host Board and NHSGG&C
Telecommunications	Local policies Greater need for one- one comms with staff at Beatson VC requirements can be anticipated
Imaging	To be integrated with existing Board services/procedures.

Group 1 equipment items, which are generally large items of permanently installed plant or equipment, will be supplied, installed by the PSCP, maintained and replaced by the Host Board.

Group 2 items, which are items of fixed plant and equipment used in the delivery of engineering services and medical equipment, will be supplied by NHSL installed by PSCP and maintained and replaced by NHSL.

Group 3 items such as the Linear Accelerators and CT Scanner will be procured, commissioned and installed through NHSGG&C

Group 4 items, generally smaller and moveable equipment will be supplied, installed, maintained and replaced by NHSL.

4.3 Agreed Risk Allocation

The key features of the New Engineering and Construction Contract (NEC 3 - Option C) contract are:

- The parties are encouraged to work together as partners in an open and transparent approach and to ensure that this partnering ethos is maintained
- There is a 'Gain/ Pain share' mechanism to act as an incentive to the delivery team, by rewarding good performance and penalising poor performance
- A clear and transparent system is 'on the table' to enable negotiation to take place on prices
- A level of 'price certainty' is determined
- All price thresholds are set using quantitative risk analysis
- It is a variant of Maximum Price/ Target Cost (MPTC) approach

In accordance with the Frameworks Scotland guidance notes, the NHS Client and the PSCP act as joint owners of the Joint Project Risk Register. Risks will be allocated to the party best able to manage the risk subject to value for money and responsibility for risks will be clearly identified. The table below illustrates the potential allocation of risk:

Table 30: Risk Allocation

Risk Category	Agreed allocation of risk		
	NHS	LO'R	Shared
Design		✓	
Development and Construction		✓	
Transition and Implementation			✓
Performance			✓
Operating	✓		
Revenue	✓		
Termination	✓		
Technology and Obsolescence	✓		
Control	✓		
Financing	✓		
Legislative	✓		

4.4 Agreed Charging Mechanisms

This project is being procured through HFS framework Scotland with design being led by the PSCP and their design team. As such there is no concession period and so no charging mechanism applied.

The PSCP shall design & build the project and upon completion hand the building over to the client (NHSL, NHSGG&C) to manage and operate the facility.

It is worth noting that during the design & construction process cognisance shall be given to the whole life costs of the facility in order that the project achieves value for money. The PSCP is also incentivised through the use of a target cost contract NEC3 Option C, which promotes that the PSCP look for efficiencies when carrying out the project.

4.5 Agreed Key Contractual Arrangements

The preferred solution is being procured under Frameworks Scotland. This framework is founded on collaborative working and the NEC3 form of contract is used to support these principles.

Following the SGHSCD's methodology for tendering work through the new Framework for Scotland, Laing O' Rourke has been appointed as Principal Supply Chain Partner (PSCP) to work with the Project Board to finalise design, work up the target cost for the scheme and to construct the building.

As noted above, the mechanism for ensuring that this partnership ethos is carried through to the construction of the new facility is through the use of the NEC3 form of contract. The main principles of this procurement methodology are outlined below:

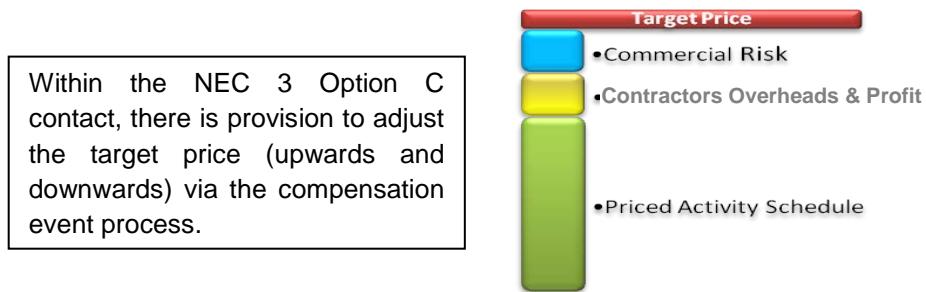
4.5.1 Open Book Philosophy

A key principle of the NEC3 Option C contract is the payment of 'Defined Cost' and an open book accounting philosophy. These require a robust, reliable and transparent system to record staff time and manage the invoicing process. This allows the Cost Advisor not only to identify costs but also to establish that the costs have been properly expended on the project and that they are allowable under the NEC3 Option C contract as defined under the "schedule of cost components".

Project costs must be referenced to items on the activity schedules with detail added against 5 main headings of; labour, plant, materials, sub contractors and preliminaries. Orders, deliveries, invoices for payment, external plant hires and sub-contracts also have to be cross-checked against Goods Received Notes.

The target price is key to the cost operation of the contract and is set during the pre-construction phase. This process concludes when the PSCP's proposals are completed for costing and the risk register has been agreed. The target price costing is made up of the following elements:

Diagram 17: Target Price Costing Elements



4.5.2 Contractor's Share Percentage and Share Range

Within clause 53 of the NEC 3 contract, the pain share/ gain share payment mechanism is set-out. This clause requires to be read in conjunction with Contract Data part 1 which defines the share percentages and share ranges. The table below outlines the share ranges on Frameworks Scotland:

Diagram 18: Pain Share / Gain Share Model



The key benefit of the introduction of the target price with a pain share / gain share mechanism is the incentivisation on the team and PSCP to control cost.

4.5.3 Priced Activity Schedule

The activity schedule is defined in Clause 11.2(20). Clause 54.1 states that ‘information in the activity schedule is not works or site information’. The activity schedule under NEC 3 option C is provided by the PSCP in contract data part 2 as part of the pre-construction phase conclusion.

The activity schedule gives a breakdown of the work to be done under the contract and this covers the entire contract price. A key interface within NEC 3 is that the activity schedule must be related to the accepted programme as defined under Clause 31.4. The principle objective of having the activity schedule and accepted programme linked under NEC 3 option C is not to assess the contractor’s payments (these are made on defined cost), but to assist in the assessment of compensation events and contractors share.

4.5.4 Defined Costs

Defined cost is outlined in Clause 11.2(23) and is made of up 3 key elements:

- The amount of payments due to sub-contractors for work which is subcontracted without taking account of amounts deducted for; retentions, payments to employer for failure to meet key dates, correction of defects after completion, payments to others and supply of equipment etc.
- The cost of components in the Schedule of Cost Components for other work
- Less, Disallowed cost (as defined under Clause 11.2(25))

4.5.5 Recording and Collation of Costs Information

Clause 52.2 requires the PSCP to keep records of:

- Accounts of payments of Defined Costs
- Proof of payments being made
- Communications about and assessments of compensation events for Subcontractors
- Other records required by the works information

The PSCP will ensure that the Cost Advisor has full and unrestricted access to accounts and records that are required to be maintained in accordance with Clause 52.3.

4.5.6 Compensation Events and the Application thereof

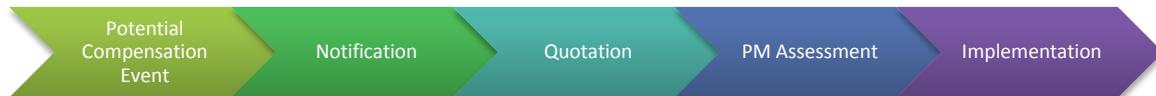
Clause 60.1 details 19 compensation events for which the PSCP is entitled to compensation if they occur. The object of the NEC 3 contract is to ensure that all compensation events are listed in one place, expressed clearly to avoid disagreement and to allocate the events in line with modern risk allocation principles.

An important aspect of the compensation event (CE) process is that both the Project Manager and PSCP are required to notify them. The Project Manager raises C.E's for instructions or changing decisions. The PSCP notifies a CE if he believes that the event is a compensation event or if the Project Manager has not notified the PSCP.

Once compensation event notifications are accepted by the Project Manager, quotations are provided in accordance with Clause 62 and submitted for consideration. These quotations cover cost and time and must be linked to the accepted programme.

The Project Manager makes the assessment in accordance with Clause 63 or 64 and they are then implemented in accordance with Clause 65. The key to the entire process within NEC3 is that the process has time constraints to ensure that decisions are made, preventing the process dragging on, allowing the Project to move forward without protracted negotiations. The compensation event process can be simply defined as per the diagram below:

Diagram 19: Compensation Event Sequence



4.6 Agreed Personnel Implications

The main potential issues relating to staff are:

4.6.1 Ability to recruit staff with appropriate skills.

4.6.1.1 Medical Physics Recruitment

Good progress has been made in recent years in recruiting new Physics staff, primarily to support the Cancer Modernisation agenda. A strategy of increasing the number of entry level Physicist posts in recent years has been successful with several staff being recruited from outside Scotland. Overall, staffing levels compare well with national recommendations with the number of Physicists and Dosimetrists in post at 82% and 93% respectively.

The challenge will however remain in filling the advanced Physicist roles for the new facility, where applicant numbers are generally low, particularly in the current financial climate and with heavy competition from other departments, many of whom are also expanding with new satellite centres.

Comparison of the existing bandings and grades suggests that at lower grades, bandings are generally consistent across Scotland; however, significant variations can be found at the higher banded posts where comparison shows that posts here can be at least one or two grades lower than the rest of Scotland and larger departments elsewhere in UK, irrespective of the volume and complexity of the workload.

On a national level, the well established Medical Physicist training scheme that includes Radiotherapy Physics, supported by NHS Education for Scotland, continues to be a success with many recent recruits to Radiotherapy coming from the scheme. It takes time for any increase in training numbers to have an effect simply due to the necessary four year training period. The balance of senior Physicist posts to the number of trainee posts remains under close review to ensure an optimum number can be supported alongside the clinical radiotherapy service.

An early high profile recruitment campaign is seen to be essential to underpin the delivery of the new facility, advertising the significant improvements and advances being delivered in the west of Scotland

4.6.1.2 Radiography

The BWoSCC has not experienced difficulty in recruiting radiographers since it opened in 2007, as staff are attracted by the size of the Centre, the excellence of the technology available and the advanced techniques carried out there. However, with individual exceptions, vacancies are usually carried until the degree students graduate in July of each year or until the post graduate diploma students graduate in October of each year. BWoSCC experience a turnover of approximately 10 -15 staff annually as a result of natural turnover, retirement or the creation of new posts. Therefore these vacancies will have to be recruited in addition to the 23.5 new radiography posts required for the satellite.

Currently, Glasgow Caledonian University and Queen Margaret's University, Edinburgh produce approximately 30 degree students per year, with a maximum of 2 – 4 post graduate

diploma students qualifying each year. It is therefore clear that the Scottish HEIs are currently providing enough graduates to replace staff at all of the Scottish departments but the additional staff for the satellite will have to be provided by some other means.

It should also be noted that new centres are being built in Northern Ireland and Guilford and two new proton therapy centres in London and Manchester. The new Northern Ireland centre will particularly challenge the BWoSCC for staff as historically a number of staff from the Belfast degree programme have been employed and there may be Irish staff that may choose to move to Derry/ Londonderry when the opportunity presents itself.

The Scottish Therapy Radiographers' Forum has written a discussion paper on the potential staffing shortage in Scotland and this has been presented to the Radiotherapy Programme Board. This paper proposes government funding of 15 annual placements on the QMU 2 year post graduate diploma programme for two years, as the quickest and most reliable means of providing significant extra numbers of staff. Additional clinical placements may also require to be identified to support this.

However, it should also be noted that total staff number is not the only deficit likely to be experienced. The satellite will need at least 4 – 5 staff at Band 7 or above, and with comparable posts elsewhere in the UK, including other Scottish Centres being graded at one or even two grades above those offered at the BWoSCC this band is unlikely to attract any great interest from external applicants. Therefore these promoted posts are likely to be filled from the existing staff of the BWoSCC and could potentially lead to a drain of experience from the Centre.

It should be noted that both therapeutic radiographers and medical physicists are included in the latest Scottish Government shortage occupation list.

4.6.1.3 Medical Staff Recruitment

Specialty Doctor Grade Staff are required to manage on treatment review of patients receiving radiotherapy. Such doctors are generally easy to recruit but vary in oncology experience.

Recruitment of consultant clinical oncologists continues to prove a challenge in NHS Scotland in 2014. There were existing vacancies in all 5 Scottish cancer centres as of January 2014. The aim will be to recruit 2 consultant clinical oncologists for the new unit to deal with additional workload. We will also plan to relocate consultant sessional input from the BWoSCC to locally provide specialist input into Lanarkshire and Forth Valley cancer populations. Making these new posts attractive must involve some scheduled time in the tertiary centre for SPA, as well as a mixture of clinics, MDTs and radiotherapy planning components

4.6.1.4 Nursing

In recent years the BWoSCC has had consistently high numbers of applicants to all nursing vacancies, one of the main attractions being the training opportunities in oncology nursing delivered in a purpose built Oncology Centre. There has been significant investment and development in the roles of Clinical Nurse Specialist and Advanced Nurse Specialist, attracting interest UK wide.

Specific training has been introduced for staff working within the Radiotherapy Services which has led to the increase in nurse led review clinics. Generally posts in outpatient services are popular due to the core working hours.

4.6.1.5 Health Records

Recruitment to positions in the Health Records Department does not pose any significant challenge. Significant in house training is in place with the opportunity to undergo IHRIM training (Institute of Health Records & Management). The service attracts candidates with wide ranging experience including school leavers and graduates. Succession planning is in place offering opportunities for promotion within the department.

4.6.2 Travel for staff between sites

There will be a need for some staff to travel between sites and the cost of this has been considered.

4.6.3 Site Management Arrangements

The workforce plan has been developed by individual staff groups with clearly identified clinical leads for each professional group.

4.6.4 Changes to Staff Bases

There may be a need for some staff to change their work base – any changes to work base will require negotiation with staff side and staff.

4.7 Agreed Implementation Timescales

Following approval of the Outline Business Case, the Full Business Case (FBC) has been prepared and now submitted to CIG for approval. An estimated 7 months was allowed for this activity. Once the FBC has been approved, the construction works to align with the decant strategy will commence. This main construction period is estimated at 18 months culminating in the Facility opening in November 2015.

Table 31: Timescales

Stage 2: OBC	Completion Date
OBBC Approved by Project Board	08/07/2013
OBBC Submission to CIG	09/07/2013
OBBC Approval by CIG	13/08/2013
Stage 3: FBC	
FBC Approved by Project Board	19/03/2014
FBC Submission to CIG	25/03/2014
FBC CIG Meeting	22/04/2014
FBC Approval by CIG	29/04/2014
Stage 4: Construction	
Start on Site	21/05/2014
Internal Fitout	27/07/2015
Full & Final Commissioning Complete	26/08/2015
Beneficial Access & LinAc Install	12/06/2015
Commence Clinical Services	23/11/2015

4.8 Agreed Accountancy Treatment

The capital costs associated with the new Radiotherapy Satellite Centre will be capitalised in line with all appropriate accounting standards and this FBC is predicated on the appropriate level of Capital Funding being made available from central Capital Resources.

5 The Financial Case

5.1 Introduction

The financial case for the preferred option, Monklands District General Hospital, sets out the following key features:

- Agreed Capital/ Funding Requirement;
- Agreed Revenue Impact;
- Impact on Balance Sheet;
- Stakeholder Support;
- Overall Affordability

5.2 Agreed Capital/ Funding Requirement

The agreed capital costs and associated funding requirement are considered in greater detail in the following sections.

The capital costs for the preferred option are shown below and are derived from cost schedules produced by the Framework PSCP, Laing O'Rourke, in conjunction with the joint cost advisors, Currie & Brown.

5.2.1 Capital Costs

Capital equipment requirements have been prepared in conjunction with NHSGG&C's Radiotherapy Physics department. A saving of £1.3m (including VAT) has been achieved on the projected costs of the capital equipment for the Satellite Facility. This can be attributed to various factors, with key amongst them being the procurement strategy that was adopted for these purchases.

Two components of this strategy have driven the cost savings, namely, the adoption of a Prime Supplier for the main radiotherapy equipment (linear accelerators, planning system and management systems) and by coalescing the procurement of both the satellite capital equipment together with that scheduled for replacement for NHSGG&C under the Scottish Government capital replacement programme for radiotherapy equipment (CERP) for the next two years

Table 32: Forecast Capital Costs for the Preferred Option

	Monklands District General Hospital FBC
<u>Capital Costs</u>	
Building Capital Cost	£11,346,229
Non Works Costs	£39,568
Fees	£1,604,964
Equipment	£4,658,333
Quantified Risk Allowance	£720,935
	<hr/>
	£18,370,029
Irrecoverable VAT	£3,578,006
	<hr/>
	£21,948,035

The build costs represent the costs of construction in respect of a 3 bunker facility with 2 floors amounting to a total footprint of 3,071 m².

The departments and areas are based on Schedule of Accommodation Revision 7 which is included as Appendix Nine of this FBC.

The estimated construction costs have been prepared by the Framework PSCP partners in conjunction with the Cost Advisors using the following assumptions and allowances:

- The project is planned to commence construction in May 2014 with Clinical Service commencing in November 2015;
- Costs are based on a 2013 price base;
- No demolition costs are required for the site of the preferred option.

5.2.2 Risk Allowance

A fully costed risk register has been developed and applied to the capital costs as a result of the reviews and workshops undertaken which are described in further detail within Section 6.6 Risk Management. A copy of the risk register is included within Appendix Eight. This approach is reflective of the inherent risk management processes within the NEC form of contract used under Frameworks Scotland and replaces an Optimism Bias allowance which previously would have been applied to the capital costs. In regard to inflation, this has also been included in the costed risk register and it is anticipated that in collaboration with the appointed PSCP, costs in this respect will be minimised.

5.2.3 Capital Funding and Procurement

As noted previously, after taking cognisance of the high level of equipment costs within the forecast project spend, the remaining construction costs fall below the de minimus level noted within Scottish Capital Investment Manual (SCIM) as being suitable for exploring potential Not for Profit Distribution (NPD) routes. The figures identified within this FBC confirm this remains the position. As such, in order to progress the project, it will be necessary for a capital funding contribution to be made available from the Scottish Government Health Directorates equating to the £21.948m capital value to allow the construction of the facility to proceed under the Frameworks Scotland procurement route.

As explained in greater detail within Section 4.2.1, the arrangements for operating the new facility will rest with both NHS Lanarkshire and NHS Greater Glasgow & Clyde. Clinical services and major medical equipment for the satellite will be provided by NHS Greater Glasgow & Clyde. The building itself will be constructed on land owned by NHS Lanarkshire, and as such, ownership and responsibility for the facilities management, support services and clinical services support will also rest with NHSL. As a result it will be necessary for the appropriate levels of capital funding to be split between NHSGG&C and NHSL as appropriate.

The total projected capital spend profile for the full development is shown in the table below:

Table 33: Indicative Spend Profiles

<u>Indicative Capital Spend Profile</u>	<u>2013/14</u>	<u>2014 /15</u>	<u>2015 /16</u>	<u>TOTALS</u>
	<u>£'000</u>	<u>£'000</u>	<u>£'000</u>	<u>£'000</u>
Monklands District General Hospital	£590	£9,280	£12,078	£21,948

5.3 Revenue Impact

5.3.1 Total Revenue Costs

The table below sets out the forecast revenue implications for the satellite facility presenting both the pay and non-pay costs of running two linear accelerators at the new satellite facility at Monklands District General Hospital. Costs based on 2013/ 2014 prices.

Table 34: Total Revenue Costs

Monklands District General Hospital	
<u>Pay Costs</u>	
Medical Staff	£387,200
Medical Physics Staff	£657,800
Therapy Radiography Staff	£913,000
Mould Room Staff	£112,300
Nursing Staff	£168,400
Admin and Clerical Staff	£75,900
Total Staff Costs	£2,314,600
<u>Non Pay Costs</u>	
AHP Services	£116,600
Hotel Services	£65,000
Facilities and Estates	£233,800
HI&T	£5,000
Specialised Radiotherapy Services	£326,126
Other Non Pay Costs	£12,900
Depreciation	£1,068,600
Total Non Pay Costs	£1,828,026
TOTAL PAY AND NON PAY COSTS	£4,142,626

The high level indicative revenue costs for running the facility noted within the Full Business Case are £4.143m. This is a reduction of £0.034m from OBC. Pays costs increased due to costings being adjusted to top of scale minus one in line with current staffing costs and an additional radiographer post being required. This was offset by a reduction in the non pays figure mainly due to a reduction in the capital charge requirement due to equipment purchase costs reducing.

5.3.2 Pay Costs

The staff numbers required to operate the new facility have been reviewed in detail by a Workforce Planning group established as part of the project governance arrangements. This group identified the number of staff required, and associated skill mix, which was subsequently costed. Further Information on the Workforce Planning assumptions is contained within Section 2.4.2.

5.3.3 Non Pay Costs

The clinical non-pay costs have been forecast based on the projected activity and case mix to be undertaken at the Satellite Centre and costed using current information held for the BWoSCC. Hotel Services, Estates and Facilities costs have been costed on a site specific basis and supplied by NHS Lanarkshire for the preferred option.

5.3.4 Depreciation

Depreciation has been calculated using the following estimated useful lives:

- Building – 40 years;
- Medical Equipment – 7 to 10 years;
- Information Technology – 5 years.

For forecasting and appraisal purposes, the building depreciation has been calculated over 40 years. This matches the assessed life of the Tom Weldon Building at BWoSCC which currently houses the radiotherapy bunkers for the West of Scotland Boards. Following completion of the facility it is anticipated that the new building will be valued by the appointed valuer at which time a building specific Assessed Life will be allocated.

At the Outline Business Case costs for equipment provision were estimated at £5.750m this has reduced to £4.658m in the FBC and this reduction has resulted in a lower depreciation charge.

5.3.5 Overall Recurring Revenue Costs

These costs represent the additional recurring revenue costs associated with the Radiotherapy Satellite Centre to be funded by West of Scotland Boards using existing agreed proportions.

As explained in greater detail within Section 4.2 the arrangements for operating the new facility will rest with both NHS Lanarkshire and NHS Greater Glasgow & Clyde. Clinical services and major medical equipment for the satellite will be provided by NHS Greater Glasgow & Clyde and costs will be re-allocated to WoS Boards using established formulae.

As the building will be constructed on land owned by NHS Lanarkshire, ownership and responsibility for the facilities management, support services and clinical services support will rest with NHSL. It is proposed that a trading account will be established by NHSL which will capture the non-clinical service elements. Regular performance reports will be reported to the Regional Cancer Advisory Group (RCAG) and associated costs will also be re-allocated to WoS Boards using the existing agreed proportions.

As requested in the SGHSCD letter of 19th December 2012 which confirmed approval of the Initial Agreement, statements of sustainable financial support for the revenue costs associated with the preferred option are contained Appendix One.

5.4 Impact on Balance Sheet

The capital costs associated with the new Radiotherapy Satellite Centre will be capitalised in line with all appropriate accounting standards and this FBC is predicated on the appropriate level of Capital Funding being made available from central Capital Resources.

Due to the West of Scotland dimension to this particular scheme the following Financial Governance arrangements have been agreed for the project:

5.4.1 Major Medical Equipment

As responsibility for clinical services and major medical equipment will rest with NHSGG&C, ownership of the associated equipment will rest with NHSGG&C. As such the appropriate capital funding to allow for the procurement of this equipment will need to be made available to NHSGG&C.

5.4.2 Construction Costs of the Facility

As responsibility for the construction and provision of the facility at Monklands District General Hospital will be the responsibility of NHSL, the capital funding for the construction of the facility, including appropriate fees etc., will need to be made available to NHSL. On completion of the facility, it is proposed that the new building be subjected to an initial valuation by the District Valuer. As the project will result in the construction of a new building it is anticipated that the vast majority of the construction investment will add value to NHSL's existing estate, however any impairment value will be communicated to the SGHSCD through completion of the annual AME Impairment Return.

5.4.3 Expenditure up to Stage 3 of the Project (FBC Stage)

Following approval of the OBC, work continued to develop the design to Stage 3 and costs incurred in respect of this work are estimated to amount to £0.590m for the financial year 2013/14. This includes design and development costs that will be transferred from NHSGGC to NHSL recognising the work done up to approval of the OBC.

5.5 Impact on Income and Expenditure Account

The total revenue cost of £4.143m is split NHS GGC £3.222m and NHS Lanarkshire £0.921m. NHS GGC costs relate to providing the clinical service with NHS Lanarkshire providing the estates and support services. As the activity shall be all be captured under NHS GGC it is proposed that all funding shall sit under NHS GGC with NHS Lanarkshire cross charging for the costs they incur.

5.6 Stakeholder Support

The development of a satellite radiotherapy facility is supported by the following NHS Health Boards:

Diagram 20: Supporting Boards



Letters of support are provided within Appendix One. The work of the project core group to develop the FBC has been supported by a wide range staff and voluntary sector stakeholders.

5.7 Overall Affordability

The Financial Case has highlighted the overall capital and revenue affordability of the preferred option and identifies a requirement for:

- A total forecast Capital cost of £21.948m to be funded through a capital allocation from the Scottish Government Health Directorates to NHS Lanarkshire and NHS Greater Glasgow & Clyde;
- Total recurring annual revenue costs of £4.143m to be funded by West of Scotland Boards in line with existing agreed proportions;

6 Management Case

6.1 Introduction

This section of the FBC sets out the management arrangements that are in place to ensure the successful delivery of the Satellite Radiotherapy Facility project. Areas covered include:

- Procurement Strategy
- Project Management
- Change Management
- Benefits Realisation
- Risk Management
- Post Project Evaluation

6.2 Procurement Strategy

The preferred option is to be procured under Frameworks Scotland. This framework is founded on collaborative working and the NEC3 form of contract is used to support these principles.

Following the methodology for tendering work through Frameworks Scotland, a Principal Supply Chain Partner (PSCP) Laing O'Rourke has been appointed to work with the Project Board to complete design, deliver the target cost for the scheme and to construct the building.

6.3 Project Management

6.3.1 Project Management Approach

To successfully manage and deliver the Satellite Radiotherapy Project, clearly defined project management arrangements have been established and experienced personnel identified to implement them.

6.3.2 Project Management Structure

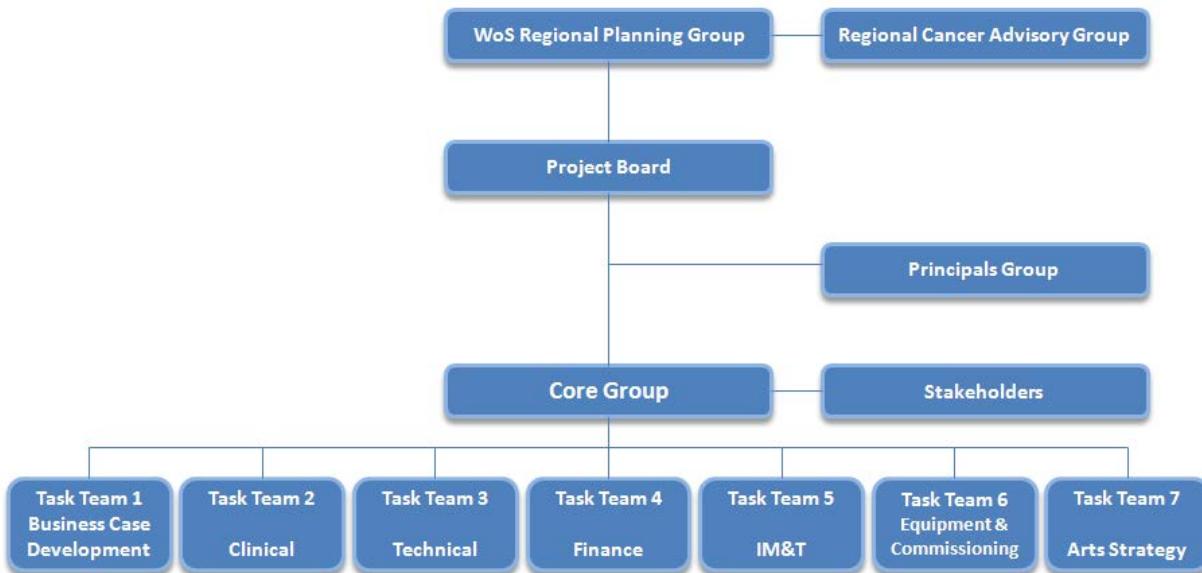
This development will be led by the Satellite Radiotherapy Facility Project Board, chaired by the West of Scotland Director of Regional Planning, which will in turn be sponsored by the West of Scotland Regional Planning Group and the Regional Cancer Advisory Group Director.

The Project Board will comprise representatives from NHS Forth Valley, NHS Greater Glasgow & Clyde, NHS Lanarkshire, Regional Planning, Staff Representatives and Patient and Staff side representatives. The Project Board will represent the wider ownership interests of the project and maintain co-ordination of the development proposal. The Project Board will report to the West of Scotland Regional Planning Group and Regional Cancer Advisory Group.

A Project Core Working Group has been put in place to manage the day to day detailed information required to deliver the project. The project will also be supported by a series of sub groups/ task teams as required and identified in the 'Guide to Frameworks Scotland' published by Health Facilities Scotland. These task teams will include Technical User Group; Business Case Development; IM&T; Equipment; Commissioning and Finance.

This can be simplified in the diagram below with a full membership and remits for each group found in Appendix Four:

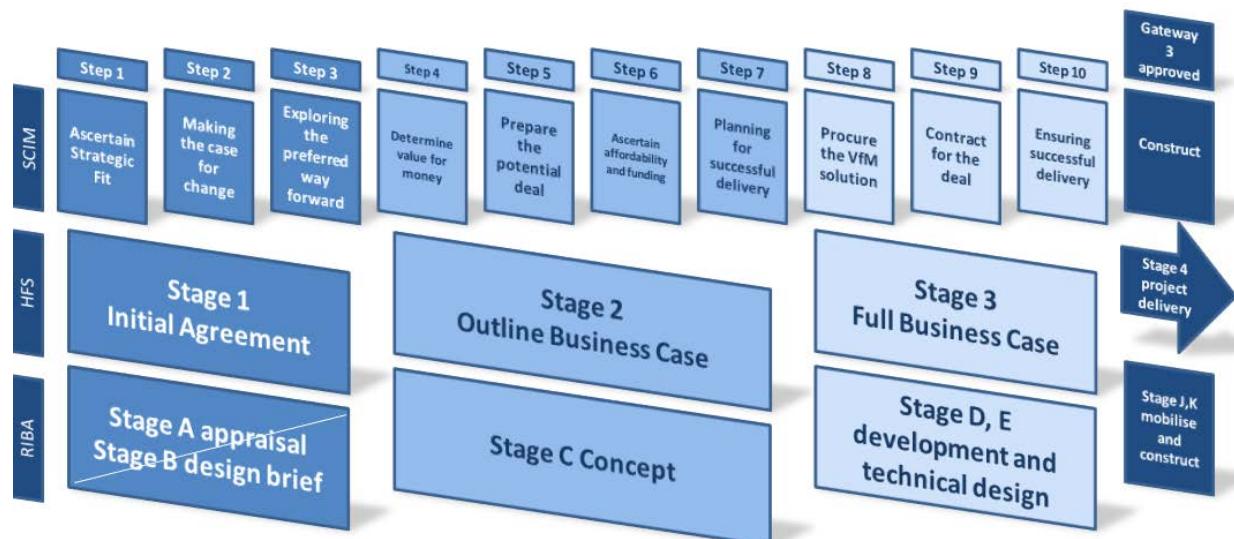
Diagram 21: Project Governance



6.3.3 Project Management Framework

The diagram below outlines the framework for the implementation of the project:

Diagram 22: Project Management Framework



6.3.4 Programme and Milestones

The IA for the project was approved by the SGHSCD CIG meeting on 19th December 2012 with notification of the OBC being formally approved to proceed to FBC on 16th August.

Table 35: Stage 2/ OBC Critical Milestones:

Milestone	Date
PSCP Appointed	12 th May 2013
Project Board Approval of OBC	08 th July 2013
Submission of OBC to SGHSCD	09 th July 2013
SGHSCD CIG	13 th August 2013
OBC Approval	16 th August 2013

The Project Team has therefore developed a Stage 3/ FBC programme that concludes with the submission of this FBC to SGHSCD in March 2014 in line with SGHSCD requirements.

Table 36: Stage 3/ FBC Critical Milestones

Milestone	Date
Complete Market Testing	31 st January 2014
Finalise Target Price	12 th February 2014
Project Board Approval of FBC	19 th March 2014
Submission of FBC to SGHSCD	25 th March 2014
SGHSCD CIG	22 nd April 2014
Anticipated FBC Approval	29 th April 2014

Anticipated construction critical milestones (as per Laing O' Rourke Construction Programme Rev 5) are as follows:

Table 37: Critical Milestones

Milestone	Date
Planning Application Approved	05 th February 2014
Start on Site	21 st May 2014
Beneficial Access to Bunkers	12 th June 2015
Project Completion	26 th August 2015
Clinical Services Commence	23 rd November 2015

The dates noted in the above tables will be subject to further development/ agreement as the project progresses.

6.3.5 Stakeholder Consultation and Engagement

An outline communications plan has been prepared for the Satellite Radiotherapy Facility. This will continue to be refined beyond the FBC stage of development.

Diagram 23: Key Aims

- Raise awareness of proposals for the new radiotherapy facility and what services it will provide
- Ensure patients, staff and key stakeholders are kept updated on progress
- Highlight benefits for service users and staff

Diagram 24: Key Messages

- This is an important new development which would increase existing capacity and help meet future patient demand
- The satellite facility would be equipped with state-of-the-art technology to deliver the same world-class radiotherapy treatment provided at the Beatson
- Many more patients would be able to access cancer treatment services not previously available locally
- Around 80 patients a day could be treated in the new facility for lung, breast, prostate and bowel cancers

6.3.5.1 Target Audiences

The Target Audiences to be covered under the Communications Plan are as follows:

- Cancer Patients and their families
- NHS cancer staff and cancer leads
- NHS West of Scotland Board staff
- GPs and practice staff
- Cancer Support Groups and Charities
- Patient, service user and patient representatives
- NHS Public involvement/ engagement forums
- Community representatives (local councillors, MSPs, MPs and community councils)
- Scottish Ambulance Service
- Community groups
- Local and National Media
- General Public

6.3.5.2 Channels of Communication

There will be a joint approach to communications with the four NHS West of Scotland Boards taking responsibility for implementing the communications plan. This will make use of existing communication tools supported by the development of additional channels of communication to reach the target audience identified.

These include:

- NHS Board websites
- Social Media channels
- Staff newsletters and briefs
- Staff Q&As (for staff directly affected)
- Staff briefings and presentations
- WOS NHS Cancer leads
- WOS NHS Cancer Groups
- Regional Cancer Advisory Group
- NHS Board intranets
- Local and national media
- NHS Board newspapers and magazines
- Stakeholder meetings, events, site visits and tours
- Email updates to key stakeholders

6.3.5.3 Responsibility for Implementing the Strategy

Responsibility for implementing the communication plan rests with the Communication Leads in each of the partner agencies, supported by members of the Project Board and project sub-group.

6.3.5.4 Stakeholder Engagement through Detailed Design

A number of different methods have been used throughout the detailed design process for the Project to ensure full stakeholder engagement:

Diagram 25: Detailed Design Engagement

- A series of stakeholder workshops to discuss the 1:200 and 1:50 drawings, with full sign off prior to presentation to the Project Board for ratification
- The use of local patient groups in the discussion and agreement of the name for the new facility
- Discussion with The Friends of the Beatson charity in order to understand the potential for enhancement to the base scheme from both a materials used and services provided perspective
- The involvement of stakeholders in the selection and appointment of an Art Coordinator for the Project to ensure a cohesive Art Strategy is adopted which clearly links the existing Beatson Strategy with the Satellite Facility

6.3.5.5 Programme of Events

A communication plan will be developed to highlight key developments and milestones from the start of the construction process through to the completion and official opening. This will include a sod cutting ceremony (to tie in with the anticipated start of construction), an event to mark the completion and handover of the building, the treatment of the first patients and an official opening after the building becomes operational in Nov 2015. This will be supported by a programme of meetings, guided tours and events to familiarise staff and other key stakeholders (including patient groups and patient representatives, local GPs etc) with the layout and design before the building becomes operational.

6.3.5.6 Monitoring and Evaluation

Monitoring and evaluation will be carried out on an ongoing basis and will take into account media monitoring (including social media), web statistics and feedback from meetings, stakeholders and events.

This feedback will be used to inform the ongoing development and implementation of the communication plan which will be revised and updated as the project progresses.

6.4 Change Management

The project will utilise the processes from the Frameworks Scotland procurement route which uses the NEC3 Engineering and Construction Contract with Activity Schedule.

This creates a structure and a discipline to manage change via the use of Early Warning Notices and Compensation Events and ensures change is identified early and is proactively managed by the project team.

6.5 Benefits Realisation

The main benefits for the Satellite Radiotherapy Facility are noted within section 2.9 of this FBC 'Benefits Criteria' and they are defined within Table 14.

These will be reviewed as an integral part of the Post Project Evaluation work to ascertain if the benefits identified against the objectives of the business case have been met as a result of the project.

6.6 Risk Management

A Risk Register has been developed that is reflective of the Preferred Option and that includes contributions from all key stakeholders. The Risk Register has been developed in accordance with SCIM guidance.

A Risk Workshop was held on 08th May 2013 in order to establish a project specific Register for the Project.

Each identified risk has been assessed, quantified, managed and a designated risk owner/manager assigned.

The Register has continued to be routinely reviewed and updated over the lifespan of the Project to minimise the level of risk.

The Register is an Agenda item at Technical, Core Team and Project Board Meetings, with all high priority risks subject to review at the Core Team and Project Board and a general overview of all other risks to ensure that their impact on the Project is not escalating.

The Risk Register is a key tool in the ongoing management of the project with a risk management strategy being employed to ensure:

- Risks are identified in advance and mitigation strategies are agreed
- A process is in place to monitor risks and keep them up to date
- Agreement as to the right balance of control to mitigate against the adverse consequences of the risk should it materialise
- A decision making process is implemented, supported by a framework of risk analysis and evaluation

6.7 Contract Management

The overarching aim of Contract Management is to ensure that project needs are satisfied and that the client receives service in line with what is being paid for within the boundaries of the contract whilst achieving value for money. This will be achieved through optimising efficiency, effectiveness and economy of the service or relationship described by the contract, balancing costs against risk and actively managing the customer-provider relationship.

Contract Management also involves recognising the balance of the roles and responsibilities as defined under the contract and aiming for continuous improvement over the life of the Project.

Good Contract Management will:

- Maximise the chances of contractual performance in accordance with the contract requirements by providing continuous and clear contract management which supports both parties;
- Optimise the performance of the project;
- Support continuous development, quality improvement and innovation throughout the Project;
- Ensure delivery of best value;
- Provide effective management of commercial risk;
- Provide an approach that is open to scrutiny and audit;
- Support the development of effective working relationships between both parties;
- Encourage effective and regular communication underpinned by clear communication mechanisms
- Allow flexibility to respond to changing requirements;
- Demonstrate clear roles, responsibilities and lines of accountability;
- Ensure that all works and services are in compliance with the Authority's Requirements, current legislation, relevant changes in Law and Health and Safety requirements, and NHS Scotland policies and procedures

In order to facilitate effective Contract Management, competent and appropriate management resource is in place to establish that the services which the client has procured are delivered and that the contract continues to provide a high level of compliant service to its end users and wider stakeholders.

6.8 Post Project Evaluation

In order to assess the impact of the project, an evaluation of activity and performance must be carried out post completion. This is an essential aid to improving future project performance, achieving best value for money from public resources, improving decision making and learning lessons. The PPE shall follow the guidance as detailed in the Scottish Capital Investment Manual and will be implemented six months after completion, appraising all stages of the Project from preparation of the business case through construction to occupation and service.

A Post Occupancy Evaluation will be implemented 2-5 years after completion to appraise whether the project has delivered its anticipated improvements and benefits.

In order to maximise the success of evaluation, wide stakeholder involvement in planning and execution should be sought and a multi-disciplinary evaluation team formed comprising representation from:

- Clinicians
- Nursing Staff
- Patients
- Estates
- Finance
- IM&T Professionals
- Project Director

The study will be overseen and co-ordinated by a Project Manager as required by the SCIM Project Evaluation Guide.

6.9 Contingency Plans

Detailed arrangements on two levels are in place to assure the completion of the project. The primary focus has been to make significant efforts to establish a highly effective and responsive Project Management structure with efficient communication processes to ensure that any programme issues are identified quickly and swiftly mitigated. This is a key strategy and reflects the level of importance placed upon the delivery of the project within the agreed timeline.

Secondly, there is an assurance that service provision will continue to be available at the Beatson should the project programme be delayed. Whilst this would not be desirable it is key that contingency plans are available which will mitigate any delay in programme from a service perspective.

7 Conclusion

With current high levels of activity at the Beatson West of Scotland Cancer Centre and predicted rising levels of cancer incidence over the next ten to fifteen years, there will be a significant increase in the capacity requirements for radiotherapy in Scotland.

Providing the Satellite Radiotherapy Facility on the Monklands General Hospital site will improve patient experience whilst offering services locally to where people live. As a central element of the proposal this will in turn enable the meeting of the challenges of implementing NHS Scotland's 'Route Map to the 2020 Vision for Health and Social Care' (2013), alongside progressing the 'Detect Cancer Early' programme, the 'Better Cancer Care' action plan and the 'Health Care Quality Strategy'.

The Preferred Option, on the site of the Airdrie Health Centre on Monklands General Hospital site represents the best investment to provide the required services going forward. It is the best value option, as has been demonstrated, and would fulfil the drivers identified in the FBC. The new facility would provide a 21st century environment that would meet the needs and aspirations of the patients in the West of Scotland.

Appendix 1

Letters of Support

Greater Glasgow and Clyde NHS Board

JB Russell House
Gartnavel Royal Hospital
1055 Great Western Road
GLASGOW
G12 0XH
Tel. 0141-201-4444
Fax. 0141-201-4601
Textphone: 0141-201-4479
www.nhsoggc.org.uk



Ms Janette Fraser
West of Scotland Director of Regional
Planning
NHS Forth Valley
Carseview House
Castle Business Park
Stirling
FK9 4SW

Date: 6th March 2014
Our Ref: RC/LL010

Enquiries to: Robert Calderwood
Direct Line: 0141-201-4614
E-mail: robert.calderwood@oggc.scot.nhs.uk

Dear Janette

I can confirm that NHS Greater Glasgow and Clyde will commit to fund its share of the revenue costs associated with the West of Scotland Radiotherapy Satellite Facility. This confirmation is on that basis that the Scottish Government will fund the capital costs.

The development was discussed at a meeting of our Quality and Performance Committee on 17th September 2013 and will be brought to the Board within the financial plan for 2014/15 and beyond.

I note that the indicative Board shares are based on current NHS Boundaries. We will work with NHS Lanarkshire to agree the revised contributions that arise from the planned changes in these boundaries.

Yours sincerely

A handwritten signature in black ink, appearing to read "Robert Calderwood".

ROBERT CALDERWOOD
Chief Executive

**Dumfries and Galloway
NHS Board**

Finance Directorate

High West
Crichton Hall
Bankend Road
Dumfries
DG1 4TG



Tel: 01387 244035
Email: katy.lewis@nhs.net

Ref: KL/LG
Date: 27th February 2014

Ms Janette Fraser
Director of Regional Planning
West of Scotland Director of Regional Planning
NHS Forth Valley
Carseview House
Castle Business Park
STIRLING
FK9 4SW

Dear Janette

SATELLITE RADIOTHERAPY FACILITY FULL BUSINESS CASE (FBC)

Further to your e-mail of 26th February 2014, I confirm support from NHS Dumfries and Galloway for the Full Business Case (FBC) for the Satellite Radiotherapy Facility.

Should you require any further information or clarification with regard to the above, please do not hesitate to contact me on 01387 244035 or katy.lewis@nhs.net

Yours sincerely

A handwritten signature in black ink, appearing to read 'Katy Lewis'.

Katy Lewis
Director of Finance

Financial Services Division
Greenan House
Ailsa Hospital
Dalmellington Road
AYR, KA6 6AB



Janette Fraser
West of Scotland Director of Regional
Planning
NHS Forth Valley
Carseview House
Castle Business Park
STIRLING
FK9 4SW

Date	7 March 2014
Your Ref	
Our Ref	DL/KH/005
Enquiries to	Derek Lindsay
Extension	13326
Direct line	01292 513326
E-mail	derek.lindsay@aapct.scot.nhs.uk

Dear Janette

Subject: Satellite Radiotherapy Facility Full Business Case

Further to discussions on 7 February 2014 and 28 February 2014, NHS Ayrshire and Arran support the above Full Business Case.

Yours sincerely

A handwritten signature in black ink that reads 'Derek Lindsay'.

Derek Lindsay
Executive Director of Finance

Finance Department

Board Headquarters,
Kirklands Hospital,
Fallside Road,
Bothwell
G71 8BB
www.nhslanarkshire.co.uk



Ms J Fraser
West of Scotland Director of Regional
Planning
NHS Forth Valley
Carseview House
Castle Business Park
STIRLING
FK9 4SW

Date	12 March 2014
Our Ref	LA/AD
Enquiries to	Laura Ace
Direct Line	01698 858185
Fax	01698 858288
Email	laura.ace@lanarkshire.scot.nhs.uk

Dear Janette

I can confirm commitment to the NHS Lanarkshire share of the revenue costs. It is assumed the capital funding would be provided from central SG funds.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Laura Ace'.
LAURA ACE
DIRECTOR OF FINANCE

NHS Forth Valley

Carseview House
Castle Business Park
Stirling
FK9 4SW

Telephone:
Fax:



Mrs Janette Fraser
West of Scotland Director of Regional
Planning
NHS Forth Valley
Carseview House
Castle Business Park
Stirling

Date	12 th March 2014
Your Ref	
Our Ref	
Enquiries to	Mrs F Ramsay
Extension	
Direct Line	01786 457245

Dear Paul

Satellite Radiotherapy Facility Full Business Case

I write with reference to your email of 26th February 2014 confirming NHS Forth Valley's commitment to the Radiotherapy Satellite Development considered at the Regional Planning Group on 28th February 2014.

This confirmation includes financial commitment as outlined in your email of 26th February 2014 which totals £ 416,000 on a full year for NHS Forth Valley. It is also assumed that capital costs for the development will be funded centrally.

Yours Sincerely

A handwritten signature in black ink that reads "Fiona Ramsay".

Fiona Ramsay
Director of Finance

Appendix 2

A+DS Support

NHSScotland Design Assessment Process – Report Pro Forma

Project Name: LK04 (formerly FV02) West of Scotland Satellite Radiotherapy

Business Case Stage: FBC

Assessment Type: Desktop

Assessment Date: 21 March 2014

Response Issued: 24 March 2014

Introductory Remarks

This assessment of the West of Scotland Satellite Radiotherapy Facility is based on the FBC stage submission received by Currie & Brown in electronic format on 11 January 2014. We note:

- The evidence requested at OBC stage to clarify the Essential Recommendations had not been provided and as such the process at OBC stage had not been formally concluded.
- The submitted scheme is currently at a less developed design stage than would normally be expected for a capitally funded project at FBC and, as such, a number of aspects have not been developed in detail, and consents such as Building Warrant have not been received. Therefore the design risk of the project is likely to be higher than normally anticipated at FBC.

An initial meeting was held on 22nd January 2014 between HFS, Currie & Brown and NHSL to review and discuss BREEAM issues. A further meeting was held on the 28th January 2014 between A+DS and Currie & Brown, on site, to discuss initial queries raised on the project. The points raised from that meeting were issued, by email, to the Project Team on 29th January 2014 with responses followed shortly thereafter – including illustrative sketches describing the standard of interiors anticipated, but as yet not detailed.

This report has been drafted following this further dialogue and takes into consideration the responses submitted by the project team after the consultation.

Joint Statement of Support

Having considered the information provided, Health Facilities Scotland and Architecture + Design Scotland have assessed the project and consider that it is of a suitable standard to be

SUPPORTED [unverified]

With the following recommendations:

Essential Recommendations

1. As the project is less developed than would normally be the case at FBC – and the design relies on the quality of materials and detailing to make an attractive environment - we recommend the Board ensure that the risks associated with concluding the Building Warrant are contained and that the cost plan is robust enough to complete the development to the standard described in the planning drawings and supplementary 3d illustrations.
2. We recommend that the board ensure the sustainability agenda for the project is improved, as identified in Appendix A and in line with current SFT & NHS guidance, to ensure that the building achieves a satisfactory level of sustainability in line with other new facilities being constructed.

Advisory Recommendations

- A. We advise the Board develop the detail of the design to take account of the points outlined in further detail within Appendix A of this report. The recommendations noted in Appendix A indicate some areas where the proposals could be augmented to better satisfy the quality aspirations illustrated by the benchmark criteria within the Design Statement.

Notes of Potential to Deliver Good Practice

- o The design has developed well since the Outline Business Case (OBC) submission in June 2013. The submitted 3d and elevational drawings illustrate a level of quality that are good and if developed through to the final scheme will provide a positive and beneficial environment for both patients and staff. This is particularly welcomed given this type of facility is, by its nature, introverted and therefore difficult to make welcoming.

We feel that the facility, if the recommendations noted are addressed in full, has the potential to deliver a model of good practice for the patient environment.

Next Stage Processes

Next Actions at Current Business Case Stage

The Board are invited to provide the evidence described below to allow the NDAP to verify the **SUPPORTED** status to the CIG. Please provide the information requested below by 07 April 2014 to nss.hfsdesignassessment@nhs.net (cc. to health@ads.org.uk).

- The Board are asked to provide a letter confirming that the cost plan makes adequate allowance to complete the development to the quality illustrated within the submission, and the risks associated with concluding the Building Warrant, and achieving sustainable energy efficient EPC B+ rating; including enhanced u-values

Appendix 3

AEDET Summary

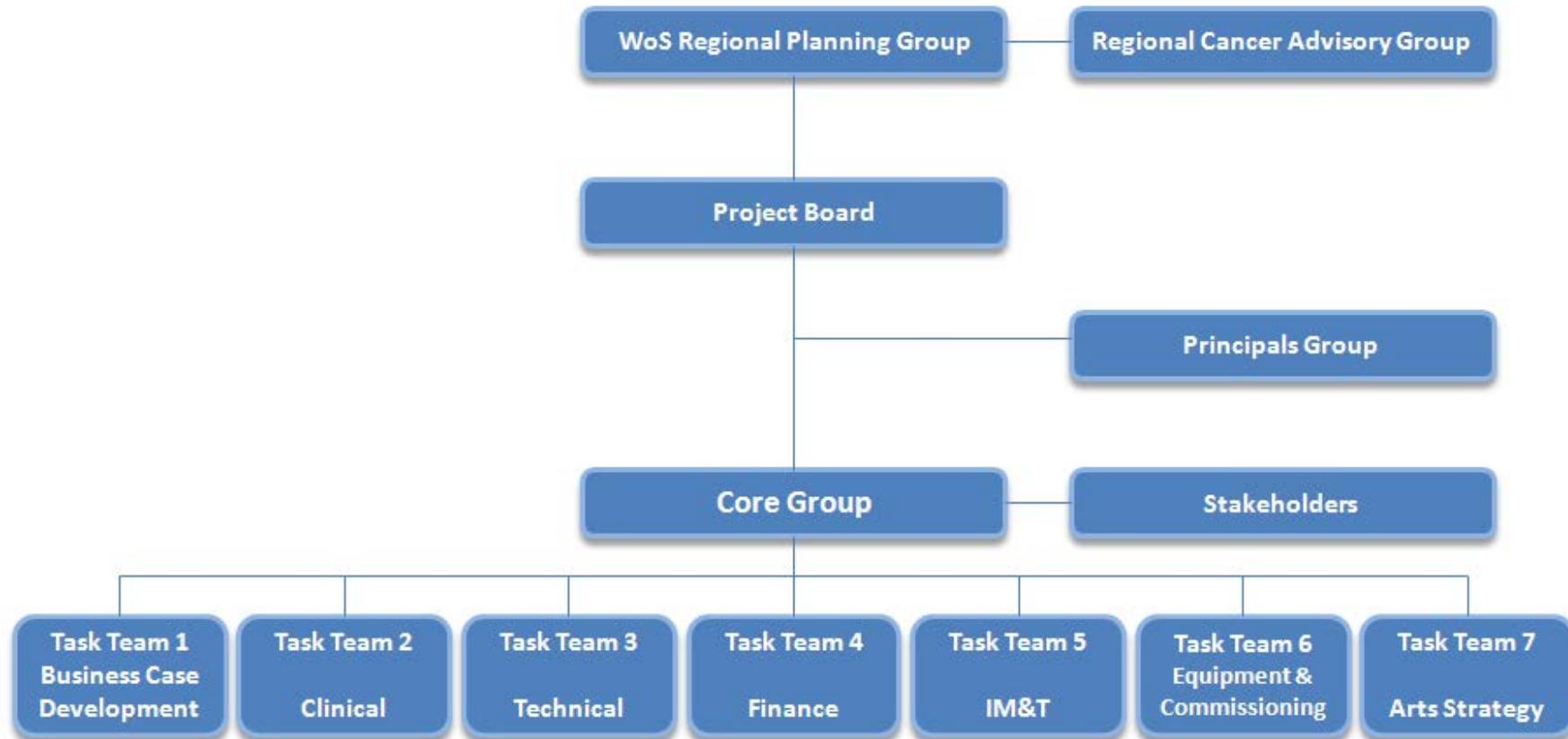
Achieving Excellence Design Evaluation Toolkit (AEDET Evolution)



NOTE: A filled traffic light dot [●] in the table above indicates a valid average score, a hollow dot [○] indicates that one or more statements have been marked as 'unable to score'.

Appendix 4

Project Structure



Meeting	Attendees	Terms of Reference
Regional Planning Group	Project Director – Janette Fraser Senior Responsible Owner – Colin Lauder	
Project Board – Monthly	NHS Ayrshire & Arran Alexandra McGuire NHS Forth Valley Elsbeth Campbell (representing WoS Heads of Communication) Dr Stan Wright Mary Orzel NHS Greater Glasgow & Clyde Dr David Dunlop Alan McCubbin David Dodds John Donnelly Diane Fraser Garry Currie Gary Jenkins Jonathan Best Rosemary Twohig Evelyn Thomson (West of Scotland Cancer Network) Dr Hilary Dobson (West of Scotland Cancer Network)	1. WoS Regional Planning Group will act as Project Board for the Frameworks WoS Satellite Radiotherapy Project and is responsible for providing the “Project Governance”. 2. Overall Management of programme and phasing. 3. Review of Capital Budget.

	<p>NHS Lanarkshire</p> <p>Colin Lauder</p> <p>Bob Brown</p> <p>Brian McWatt</p> <p>Joe Dowds</p> <p>Dr Hakim BenYounes</p> <p>West of Scotland Planning</p> <p>Janette Fraser (chair)</p> <p>Christine Livie (Admin support)</p> <p>Staff Side</p> <p>Jim Harper - Unite</p> <p>Elizabeth Stow – Society of Radiographers</p> <p>Matt McLaughlin - Unison</p> <p>Lay/ Patient Reps</p> <p>Ann Muir</p> <p>Jan Anderson</p> <p>PSC PM</p> <p>Jim Hackett</p>	
Core Group - Monthly	<p>Senior Responsible Owner – Colin Lauder</p> <p>Project Director - Janette Fraser</p> <p>PSC / NHS Lanarkshire Project Manager – Jim Hackett</p> <p>PSC Cost Advisor – Alistair Johnston</p>	<ol style="list-style-type: none"> 1. Core Group to be chaired by the Director of Regional Planning, minutes taken (Currie and Brown) and distributed 2. Core Group to assist in decision-making and on-going progress. 3. Core Group restricted to representatives of key disciplines who have a direct interest in the project. 4. Focus on all aspects required in order to ensure successful

	<p>PSCP – John McDonald</p> <p>NHS Greater Glasgow & Clyde</p> <p>Jonathan Best</p> <p>Dr David Dunlop</p> <p>Diane Fraser</p> <p>David Dodds</p> <p>Garry Currie</p> <p>Alan McCubbin</p> <p>John Gebbie</p> <p>Rosemary Twohig – Project Support (Glasgow)</p> <p>NHS Lanarkshire</p> <p>Bob Brown</p> <p>Colin Lauder</p> <p>Joe Dowds</p> <p>Brian McWatt</p> <p>Jim Hackett</p> <p>Evelyn Thomson (West of Scotland Cancer Network)</p>	<p>delivery of Scheme Project during the various project stages.</p> <p>6. Reviewing of programme, cost projections and ensure decisions are well founded.</p>
Task Team 1 – Business Case Development	<p>Jim Hackett – Lead</p> <p>Garry Currie</p> <p>Colin Lauder</p>	<p>1. Business Case Development will be led by PSC Project Manager.</p> <p>2. Action tracker maintained and distributed to the Core Group by PSC PM.</p>

	<p>Janette Fraser Alan McCubbin Bob Brown Joe Dowds Brian McWatt John McDonald - LoR</p>	3. Development and compilation of the OBC and FBC.
Task Team 2 - Clinical	<p>David Dodds – Lead Rosemary Twohig – Project Support Jonathan Hicks Stephen Harrow Martin Glegg (Garry Currie) Suzanne Smith Martin Ford Helen Stewart Karen Moore Alice MacLeod Pauline McIlroy Ewen McDonald/Emma McLeod Suzanne Ginley PSC Project Manager – Jim Hackett (as necessary)</p>	<p>Clinical and operational focus providing clinical support & opinion to the Core Group.</p> <p>Provide update actions reports on a monthly basis.</p> <ul style="list-style-type: none"> • Finalise patient pathways • Patient flow • Referral pathways • Operational policies • Impact of paperlight on operational arrangements • Review clinical output specification

Task Team 3 - Technical	<p>NHSL Capital Planning - Bob Brown NHSL Capital Planning – Joe Dowds NHS GG & C – Diane Fraser NHSL Finance – Brian McWatt PSC / NHS L Project Manager - Jim Hackett PSCP – Steven Kinninmonth / John McDonald PSC Cost Advisor – Alistair Johnston</p>	<ol style="list-style-type: none"> 1. Core Group to be chaired by the PSC Project Manager, minutes taken and distributed by PM. 2. To provide a forum where progress on contractual, cost and programme issues can be jointly monitored and where key issues can be discussed and decisions taken to fast track initiatives. 3. To provide a focus for resolving issues and will meet monthly or on an ad-hoc basis as needed. 4. Cost and change control reporting. 5. Provide technical support and opinion to the Core Group. 6. Provide update reports on a monthly basis. 7. Focus on all Technical aspects required in order to ensure successful delivery of Scheme Project during the various project stages. 8. Focus on delivery and day-to-day management of the contract. 9. Reviewing of programme, cost projections and ensure decisions are well founded. 10. Reporting to Project Board via NHS Project Manager – raise any key risks to overall delivery e.g. cost / time.
Task Team 4 – IM&T	<p>Garry Currie – Lead Calum Morrison, NHS GG&C NHS Forth Valley TBA Gavin Cox, NHS Lanarkshire Colin McGeechan, NHSGG&C Lindsay Stewart, NHSGG&C</p>	<ol style="list-style-type: none"> 1. To advise and determine the network requirements and IT infrastructure for the development 2. Provide advice and feedback to the Core Group & Finance Team/Technical Team on options and costs 3. To provide advice relating to building design around IT infrastructure (eg. server/node rooms) and cabling.

Task Team 5 – Equipment & Commissioning	Garry Currie – Lead PSCP – Chris Buchanan / Chris Morrison PSC Project Manager – Paul Fairie Commissioning Manager Terry Dunthorne, Procurement, NHSL	<ol style="list-style-type: none"> 1. Selection and procurement of all Group 2, 3 and 4 Equipment. 2. Decommission existing equipment, if relevant 3. Co-ordinate equipment schedules / asset database. 4. Co-ordination of building services commissioning. 5. Co-ordination of NHS commissioning. 6. Handover of building. 7. Zero defects.
Task Team 6 – Art Strategy	PSCP – Peter Moran (Keppie Architects) Art Co-ordinator – to be appointed Rosemary Twohig – Project Support	Development and integration of Art Strategy.
Task Team 8 – Design Development	Diane Fraser Lead – Interim period NHSL Project Lead - Stage 3 Joe Dowds PSC Project Manager - Kevin Gauld (Currie & Brown) PSCP - Chris Buchanan (Laing O'Rourke) PSCP - Yawar Shahzad (Keppie Architects) NHSGGC Garry Currie David Dodds	<ol style="list-style-type: none"> 1. To review and progress all aspects of the design in line with the Design Statement. 2. Leads identified for NHS GGC can co-opt other individuals onto the group as appropriate or necessary to provide input and advice 3. Leads are accountable for engaging their teams in the design process including recording local meetings with teams, noting those present and recording the views of team members

	Rosemary Twohig Lesley Cairns Valerie Miller Ewan MacDonald Ann Muir - Patient Rep	
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Appendix 5

Programme

West of Scotland Satellite Radiotherapy Facility Stage 2, 3 & 4 Programme

Line	Name	Dur	Start	Finish	Percent complete	2013				2014				2015				2016																		
						Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
1	PSCP Selection		13/03/2013	13/03/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	PSCP selected		13/03/2013	13/03/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
3	OBC Stage 2	14w 3d	20/03/2013	05/07/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
4	Brief PSCP & project team / kick off meeting		20/03/2013	20/03/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
5	Collation of briefing pack information	3w	21/03/2013	12/04/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
6	Complete contract for stage 2	1w 4d	29/04/2013	10/05/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
7	Review and validate brief		01/05/2013	01/05/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
8	Project launch		02/05/2013	02/05/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
9	Initial Information - utilities		12/04/2013	12/04/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
10	Initial Information - SUDrainge		12/04/2013	12/04/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
11	Finalise utilities/SUDrainge information	3w 4d	15/04/2013	10/05/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
12	Production of 1:500 block plans & outline topo information	3w 4d	15/04/2013	10/05/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
13	Non Financial benefits workshop	1d	15/04/2013	15/04/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
14	Stakeholder & user engagement	4d	30/04/2013	11/05/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
15	Strategic case	4w 3d	07/05/2013	07/06/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
16	Economic case / OB Forms	2w	13/05/2013	24/05/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
17	Life-cycle cost	2w	13/05/2013	24/05/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
18	Revenue costings	2w	13/05/2013	24/05/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
19	GEM model	1w 4d	20/05/2013	31/05/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
20	Risk adjust cost per benefit point	1w	03/06/2013	07/06/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
21	Preferred option		07/06/2013	07/06/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
22	Clinical risk	1w	13/05/2013	17/05/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
23	Quantitative risk	1w	13/05/2013	17/05/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
24	Financial case	3w 4d	13/05/2013	07/06/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
25	Commercial case	4w 3d	07/05/2013	07/06/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
26	Management case	4w 3d	07/05/2013	07/06/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
27	OBC 1st draft	1w	10/06/2013	14/06/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
28	OBC Final draft	3w	17/06/2013	05/07/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
29	OBC Approval	5w 2d	05/07/2013	13/08/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
30	WoS project board approve OBC (Draft)		05/07/2013	05/07/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
31	Submit OBC to CIG		12/07/2013	12/07/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
32	CIG Approval		13/08/2013	13/08/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
33	FBC Stage 3	32w	11/09/2013	04/02/2014	58.63	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
34	Stage 3 Contract & Agreement	19w 2d	10/07/2013	22/11/2013		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
35	NHS confirm to proceed with stage 3 & letter of appointment		10/07/2013	10/07/2013	100.00	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
36	Finalise stage 3 contract appointments / agreement	1w	18/11/2013	22/11/2013		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
37	NHS Procurement	24w 1d	01/08/2013	31/01/2014	62.61</																															

West of Scotland Satelite Radiotherapy Facility

Stage 2, 3 & 4 Programme

Line	Name	Dur	Start	Finish	Percent complete	2013					2014					2015					2016								
						Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
96	Building warrant determination period for MEP & Internals application	12w	12/06/2014	04/09/2014																									
97	Building warrant approved for MEP & Internals		04/09/2014	04/09/2014																									
98	Stage 4 Contract & Mobilisation	4w	23/04/2014	21/05/2014																									
99	Conclude stage 4 contract	1W 4d	23/04/2014	26/05/2014																									
100	Mobilise for construction	4W	23/04/2014	21/05/2014																									
101	Site set up	2W 1d	07/05/2014	21/05/2014																									
102	Indicative Construction - Stage 4	62w	21/05/2014	26/03/2015																									
103	Start On Site		21/05/2014	21/05/2014																									
104	Substructure	14w 4d	22/05/2014	04/09/2014																									
105	Groundworks - bulk excavation, piling & foundations	12w	22/05/2014	14/08/2014																									
106	Construct bunker foundations / slabs	8w	10/07/2014	04/09/2014																									
107	Construct Bunker & Structural Frame	18w 4d	31/07/2014	10/12/2014																									
108	Construct Linac Bunkers 1-3	12w	31/07/2014	23/10/2014																									
109	Construct structural frame & upper floor slabs	11w	25/08/2014	10/12/2014																									
110	Bunker 1 & 2 structure complete		24/09/2014	24/09/2014																									
111	Bunker 3 Structure complete		23/10/2014	23/10/2014																									
112	Plantroom Installations & fitout	16w	20/11/2014	25/03/2015																									
113	Lift & position main plant	1W	20/11/2014	26/11/2014																									
114	Plantroom fitout	10w	15/01/2015	25/03/2015																									
115	Roof & Envelope	14w	26/11/2014	11/03/2015																									
116	Roofing	6w	20/11/2014	14/01/2015																									
117	Envelope	14w	20/11/2014	11/03/2015																									
118	Internal Fitout	26w	15/01/2015	27/07/2015																									
119	Fitout bunkers 1 & 2	16w	15/01/2015	15/05/2015																									
120	Fitout bunkers 3	16w	05/02/2015	08/05/2015																									
121	Remaining fitout	22w	12/02/2015	27/07/2015																									
122	Commissioning	16w 3d	30/04/2015	26/08/2015																									
123	Commission bunkers 1 & 2 prior to beneficial access to Install LinAcc	6w	30/04/2015	12/06/2015																									
124	Full & final commissioning, training and complete H&S manuals	8w	02/07/2015	26/08/2015																									
125	Beneficial Access & Specialist Installation of LinAcc	10w 3d	12/06/2015	26/08/2015																									
126	Beneficial Access to bunkers 1 & 2 for Lin Accs installation		12/06/2015	12/06/2015																									
127	Specialist contractor install & commission Linac 1	6w	15/06/2015	24/07/2015																									
128	Specialist contractor install & commission Linac 2	6w	02/07/2015	12/08/2015																									
129	Project planned completion		26/08/2015	26/08/2015																									
130	Contractors Terminal End Float	4W	26/08/2015	24/09/2015																									
131	Contract completion (TBC)		24/09/2015	24/09/2015																									
132	Clinical Commissioning & Service Commencement	12w 1d	25/03/2015	24/01/2016																									
133	NHS Clinical Commissioning	12w 1d	25/03/2015	18/12/2015																									
134	Commence clinical services Bunker 1		23/11/2015	23/11/2015																									
135	Commence clinical services Bunker 2		04/01/2016	04/01/2016																									

Appendix 6

Communications Plans

Communication Action Plan

The action plan below reflects the key communications actions and key milestones from Jan 2013 – Feb 2014. A more detailed communication plan will also be developed to highlight key developments and milestones from the start of the construction process through to the completion and official opening. This will include a sod cutting ceremony (to tie in with the anticipated start of construction), an event to mark the completion and handover of the building, the treatment of the first patients and an official opening after the building becomes operational in Nov 2015. This plan will be supported by a programme of meetings, guided tours and events to familiarise staff and other key stakeholders (including patient groups and patient representatives, local GPs etc) with the layout and design before the building becomes operational.

Target Audience	Method of Communication	Message/Aims	Timescale	Lead	Action/Progress to-date
General Public	<ul style="list-style-type: none"> • NHS websites • Local and national media • NHS newspapers and magazines • Social Media • NHS Public and patient groups, forums and networks 	<ul style="list-style-type: none"> • Awareness of proposals for new satellite facility and highlight the benefits for patients 	Ongoing - updates linked to key project milestones	Elsbeth Campbell/WOS NHS communication leads	<p>Initial media release issued to local and national media on 6th Feb 2013 (vision for new radiotherapy centre unveiled)</p> <p>Further media updates issued on 16th April 2013 (Monklands confirmed as preferred location), 8th July 2013 (submission of OBC), 27th Aug 2013 (outline plans get green light) and 26th March 2014 (submission of FBC)</p>

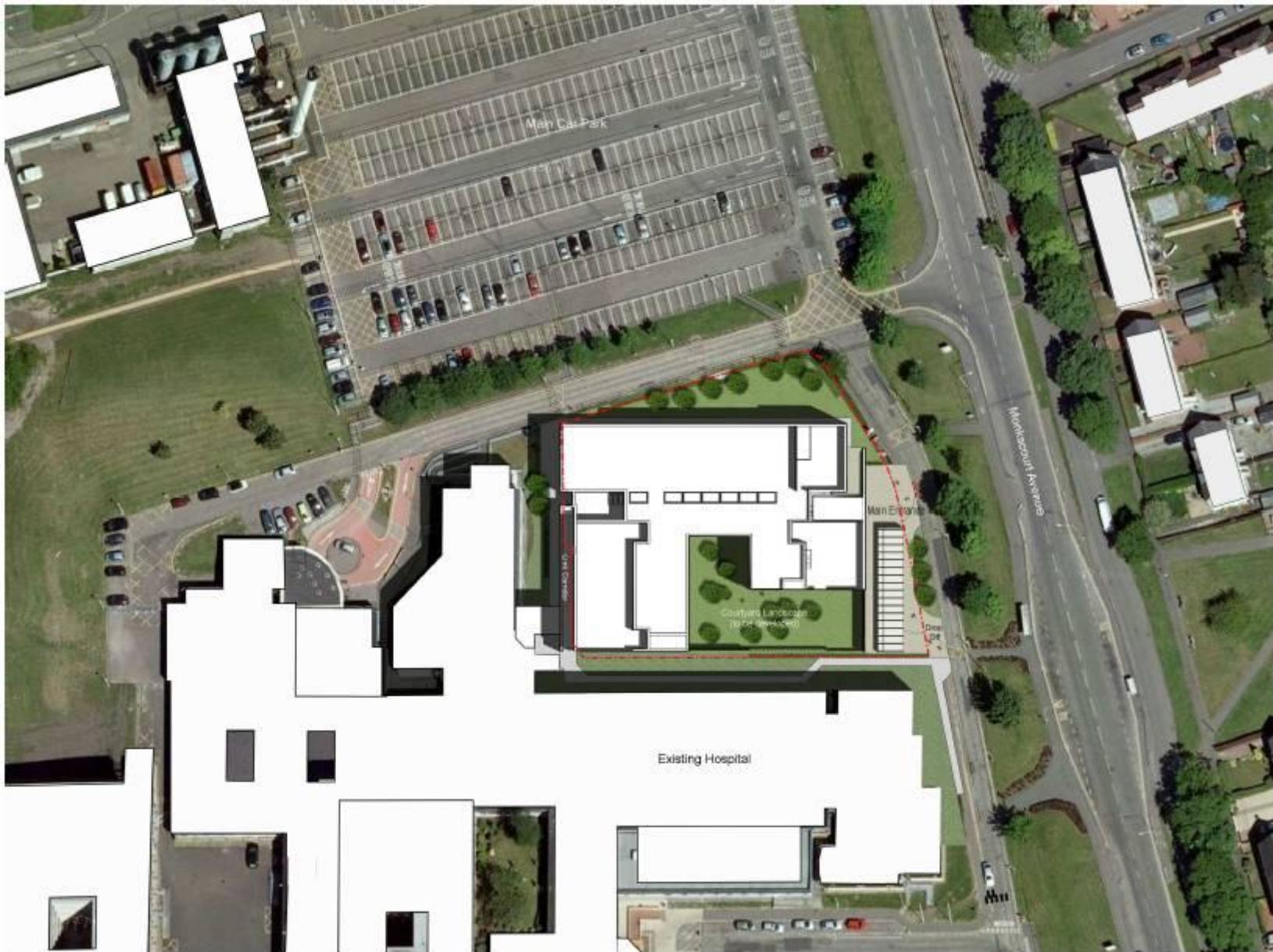
					<p>Information and links to key documents posted on WOS NHS Boards website</p> <p>Information shared via social media</p> <p>Details of proposed new facility included in local NHS newspapers and magazines</p> <p>Information circulated to PPFs, public involvement networks and patient forums</p>
WOS NHS Staff	<ul style="list-style-type: none"> • Staff Intranets • Staff Newsletters • Staff Briefs/bulletins • Meetings • Emails • Social Media • Presentations 	<ul style="list-style-type: none"> • Awareness of proposals, key documents and timescales • Benefits for patients and staff • Understanding of workforce requirements • Awareness of changes to current clinical protocols 	<p>Ongoing - updates linked to key project milestones</p> <p>Project Board and sub-group representatives</p>	<p>WOS NHS communication leads</p> <p>Staff reps</p>	<p>Initial agreement discussed and approved by partners at NHS Board meetings</p> <p>Information shared via social media</p> <p>Details shared with WOS NHS staff internally via Staff briefs and staff intranet</p> <p>Information and updates shared by staff side reps and other subgroups representatives</p> <p>Workforce Planning sub group</p>

					established Progress reports and updates shared by Board Cancer Groups, Cancer Leads and Regional Cancer Advisory Group
Cancer Patients and Support Groups	<ul style="list-style-type: none"> • Emails • Social Media • Meetings • NHS websites • Local and national media • NHS newspapers and magazines • NHS Cancer staff and leads 	<ul style="list-style-type: none"> • Awareness of proposals • Benefits for patients • Timescales • Preferred location • Details of centre facilities and operational policy • Details of changes in current referral and care pathways 	<p>Ongoing</p> <p>- updates linked to key project milestones</p>	<p>WOS NHS communication leads</p>	<p>Directory of main cancer charities and support groups created along with details of web address and social media links</p> <p>Initial update and subsequent media releases circulated to key contacts including local cancer user groups</p> <p>Information shared on social media</p> <p>Progress reports and updates shared by Board Cancer Groups and Cancer Leads</p>

GPs	<ul style="list-style-type: none"> • Staff Intranets • Staff Briefs • Email updates • Meetings 	<ul style="list-style-type: none"> • Awareness of proposals • Benefits for patients • Timescales • Understanding of any changes to current referral pathways 	Ongoing - updates linked to key project milestones	WOS NHS communication leads	Information posted on staff intranets and shared with GPs via internal Staff Briefs
MSPs	<ul style="list-style-type: none"> • Staff Intranets • Email updates • Meetings • Social Media 	<ul style="list-style-type: none"> • Awareness of benefits for patient • Details of preferred location • Timescales for delivery 	Ongoing - updates linked to key project milestones	WOS NHS Cancer leads WOS NHS Chief Executives	Initial update and subsequent media releases emailed to WOS MSPs Proposals highlighted and retweeted via social media
Scottish Government <ul style="list-style-type: none"> • Performance Management • Cancer Leads • Health Communications 	<ul style="list-style-type: none"> • Emails • Meetings • Phone calls 	<ul style="list-style-type: none"> • Assurances on public information and engagement plans • Assurances that plans are progressing on-time and on budget 	Ongoing - updates linked to key project milestones	WOS NHS communication leads Project Board representatives WOS NHS Cancer leads	Initial media release and subsequent projects updates/milestones shared with SG Health Comms

Appendix 7

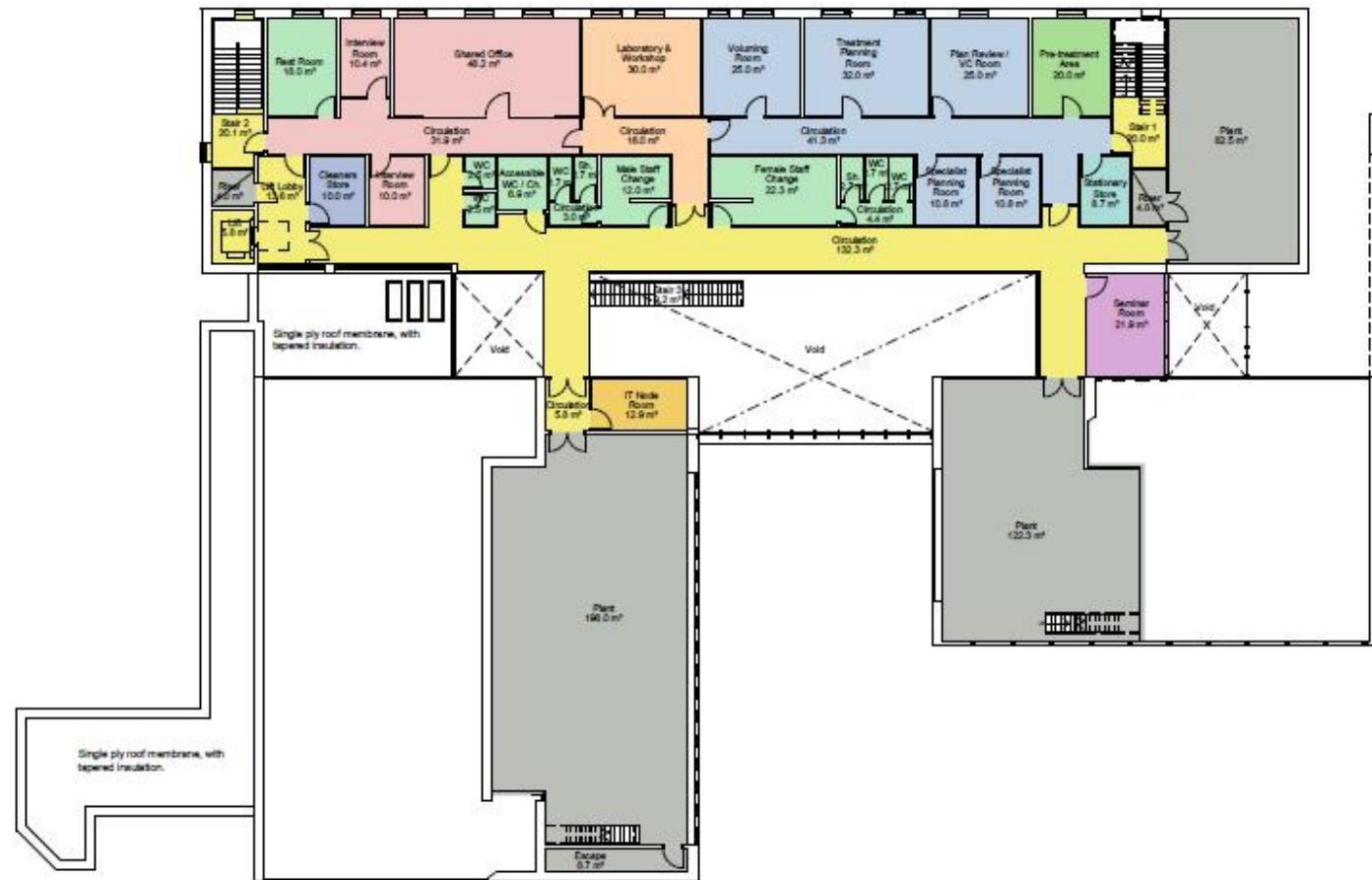
Site Plans and 3D Visuals















Appendix 8

Risk Register

Risk Category	Risk Heading	Risk Description	Pre - Mitigation					Post Mitigation							
			Probability (Likelihood)	Impact	PI Score	Risk Level	Risk Effect	Client or PSCP Risk	Risk Owner (Public / Private)	Risk Manager	Mitigation	Probability (Likelihood)	Impact	PI Score	Risk Level
Business	Service	Failure to identify appropriate stakeholders	2	4	8	Medium	Failure to meet criteria leading to major redesign	Client	RPG/Core Group	Janette Fraser/ Elsbeth Campbell	Early engagement and communication	1	3	3	Low
Business	Service	Failure to engage with appropriate stakeholders	2	4	8	Medium	Failure to meet criteria leading to major redesign	Client	Project Board/Core Group	Janette Fraser/ Elsbeth Campbell	Early engagement and communication	1	3	3	Low
Business	Service	Stakeholders have contradictory aspirations	3	3	9	Medium	Unclear brief leading to programme pressure	Client	Project Board/Core Group	Currie & Brown	Feedback and Communication (Clarity in IA)	1	2	2	Low
Business	Service	Professional expertise is not engaged at the appropriate time	1	4	4	Medium	Project progress affected	Client	Project Board/ PSCP/Tech Group	Janette Fraser/ Diane Fraser/ PSCP	Governance Structure and Appointment process for advisors	1	2	2	Low
Business	Build	Failure to adequately determine the overall programme duration	2	4	8	Medium	Inability to meet demand	PSCP	Project Board/Tech Group	Currie & Brown/ PSCP	Engagement/ Ongoing review/ Benchmarking	2	4	8	Medium
Business	Planning	Failure to obtain Planning Permission	2	4	8	Medium	Project progress affected	PSCP	PSCP/Tech Group	PSCP	Early engagement and communication	1	3	3	Low
Business	Funding	Failure to control scope creep - client change	2	3	6	Medium	Increased cost and programme issues	Client	Project Board/Core Group	Currie & Brown/ Diane Fraser	Governance and Change Control	2	3	6	Medium
Business	Funding	Failure to control budget creep	2	3	6	Medium	Increased cost and programme issues	Client	Project Board/Core Group	Diane Fraser/ Cost Advisor	Governance and Change Control	2	3	6	Medium
Service	Project Intelligence	Failure to identify and address site constraints e.g. ground conditions	2	3	6	Medium	Increased cost and programme issues	PSCP	PSCP/Tech Group	PSCP	Pre planning and Survey Work	1	2	2	Low
Service	Service	Failure to identify appropriate staffing for the Satellite	2	4	8	Medium	Reduced service	Client	Project Board/Core Group	Jonathon Best	Workforce Modelling Tools	1	2	2	Low
Service	Service	Failure to attract appropriately qualified staff for the Satellite	4	4	16	High	Potential Reduction in Service Levels	Client	Project Board/Core Group	Janette Fraser	Recruitment has commenced, both locally & internationally with 1/3 of posts filled for 12th Linacc machine at the Beatson.	4	4	16	High
Business	Business	Failure to adequately resource FBC	3	3	9	Medium	Delay to FBC	Client	Project Board/Core Group	Janette Fraser	Performance Management of Process	1	2	2	Low
Business	Funding	Failure to secure available capital funding	3	5	15	High	Major project scope review	Client	RPG/Core Group	Ian Ross - RPG Chair	The project has been market tested to exhaust best value. Ongoing dialogue with Scottish Government. Extensive value engineering exercises have taken place to ensure the project brief is being met as close to the OBC figure as possible. Failure to conclude procurement will result in additional costs to the project.	2	5	10	High
Business	Funding	Failure to secure appropriate revenue funding level	4	4	16	High	Major project scope review	Client	RPG/Core Group	Ian Ross - RPG Chair	Early and ongoing dialogue with WoS Health Boards	2	4	8	Medium
Business	Funding	Affordability requires altered design causing programme delays	2	3	6	Medium	Design review and delay	Client	RPG/Tech Group	Ian Ross - RPG Chair	Governance and Change Control	2	3	6	Medium
Service	Design	Design solution does not meet stakeholder aspirations	2	4	8	Medium	Functionality/ morale affected Service Impacted Redesign work required	Client	Project Board/Core Group	PSCP/ Currie & Brown	Early engagement and communication	2	3	6	Medium
Service	Legislative	Failure to achieve BREEAM Excellent rating	3	3	9	Medium	Achievement of Very Good rating	Client	Project Board/Tech Group	PSCP/ Currie & Brown	Discussion with HFS to approve Very Good rating	3	3	9	Medium
Service	Environmental	Disturbance to adjacent buildings and users - Monklands	3	3	9	Medium	Cost and Delay - loss of service	PSCP	PSCP/Tech Group	PSCP	Pre Planning and Communication	3	3	9	Medium
Service	Build	Interfacing with host board existing systems causes disruption/ loss of service	1	4	4	Medium	Service interruption	PSCP	PSCP/Tech Group	PSCP	Cross Board Communication within Project Board	1	4	4	Medium
Service	Design	Failure to achieve AEDET aspirations	1	2	2	Low	Design review	PSCP	PSCP/Tech Group	PSCP	Early engagement and communication	1	2	2	Low
Service	Service	Over/ under provision of facilities due to a disconnect between Boards	3	3	9	Medium	Cost and redesign	Client	Project Board/Core Group	Project Board	Cross Board Communication within Project Board	3	3	9	Medium

123

Service	Build	Overly ambitious construction and commissioning programme	3	4	12	High	Programme delay and cost increase	PSCP	PSCP/Tech Group	PSCP	Detailed Planning and Monthly Review of Programme	3	4	12	High
Service	Project Intelligence	Lack of as built information	2	3	6	Medium	Programme delay and cost increase	Client	Project Board/Tech Group	Bob Brown	Early Liaison with Host Board	1	2	2	Low
Service	Service	Failure to involve and consult specialist support services adequately in design process e.g. Infection Control	1	2	2	Low	Design Change and cost increase	Client	Project Board/Tech Group	Diane Fraser	Early engagement and communication	1	2	2	Low
Service	Service	Clinical service Commissioning	2	3	6	Medium	Delay to opening	Client	Project Board/Core Group	Garry Currie	Detailed planning and review	2	3	6	Medium
Business	Business	Programme slippage due to delayed RPG/ Boards approval of FBC	2	3	6	Medium	Delay and Service impact	Client	RPG/Core Group	Ian Ross - RPG Chair	Approval processes and Communication	2	3	6	Medium
Business	Business	Programme slippage due to delayed SGHD approval of FBC	3	3	9	Medium	Delay and Service impact	Client	RPG/Core Group	Ian Ross - RPG Chair	Approval processes and Communication	3	3	9	Medium
Business	Planning	Jan 2014 Building Regs significantly more onerous	3	4	12	High	Redesign and Cost		PSCP/Tech Group	PSCP	Full fee submitted for Staged Warrant ahead of Regs being enforced	2	4	8	Medium
Business	Service	Delays in Radiotherapy equipment procurement and influence on programme	3	4	12	High	Delay and Service impact	Client	Project Board/Core Group	Garry Currie	Detailed Planning and Review	2	4	8	Medium
Business	Funding	LINAC procurement costs are returned over budget	3	4	12	High	Increased cost and programme issues	Client	Project Board/Tech Group	Garry Currie	Continuous open dialogue throughout procurement process	2	4	8	Medium
Business	Build	Design assumptions of generic LinAc bunker are insufficient in meeting radiation legislative requirements as recommended by RPA	3	4	12	High	Delay and Service impact	Client	Project Board/ PSCP	Garry Currie/ NHSL/ PSCP	Early dialogue between PSCP and RPA has taken place and will continue. A high level engagement plan will be developed. The final specification of the machines will be known at final conclusion of the tender process at which point the probability & impact of the risk can be reviewed.	3	4	12	High
Service	Service	Interconnectivity of patient IT management systems across Boards	3	5	15	High	Failure to meet criteria leading to major redesign	Client	Project Board/Tech Group	Garry Currie	A resilient network model has been developed to establish the necessary interconnectivity of radiotherapy IT systems. Work continues to determine the necessary clinical access for clinical staff working across different Boards' clinical IT systems.	2	5	10	High
Programme	Insolvency	Key Suppliers and sub-contractors may suffer insolvency.	2	5	10	High	Impact on programme and cost	PSCP	PSCP	PSCP	Credit checks on all subs prior to appointment	1	5	5	Medium
Design	Design Development	Risk that design isn't complete at the point of agreeing target price	3	2	6	Medium	Further detailed design will be required following agreement of Target Price	PSCP	PSCP	PSCP	Progress design as far as possible prior to agreement of target price	2	2	4	Medium
Design	Design	May not receive planning consent in time	2	3	6	Medium	Potential impact on programme		PSCP	PSCP	Ensure planning application is submitted in accordance with the programme and respond to queries timely	2	2	4	Medium
Design	Design	May not receive building warrant in time	2	2	4	Medium	Potential impact on programme	PSCP	PSCP	PSCP	Ensure building warrant application is submitted in accordance with the programme and respond to queries	1	2	2	Low
Construction	Ground conditions	Unforeseen ground conditions encountered	2	3	6	Medium	Impact on programme and cost	Client			Site investigation reports carried out	2	3	6	Medium
Construction	Asbestos	Risk of encountering asbestos when carrying out services connections within existing building and completing link corridor	4	4	16	High	Impact on programme and cost	Client	Project Board/Tech Group		PSCP will review the Asbestos register and consult with estates team prior to works commencing on site. This represents an interim solution prior to an invasive survey taking place.	3	4	12	High
Service	Service	Unforeseeable actions\logistic issues by NHS	1	3	3	Low	Impact on programme and cost	Client			Open dialogue with all relevant stakeholders	1	3	3	Low
Construction	Weather	Weather conditions affecting progress but within the 1 in 10 year average	1	4	4	Medium	Impact on programme and cost	PSCP	PSCP	PSCP	Programme reflects sufficient period for weather dependant operations	1	4	4	Medium

Construction	Weather	Weather conditions affecting progress in excess of the 1 in 10 year average	1	4	4	Medium	Impact on programme and cost	Client			Weather conditions impacting on progress of the works to be recorded and where considered in excess of the average appropriate records presented	1	4	4	Medium
Construction	Services	Services in the ground - Charted	1	4	4	Medium	Impact on programme and cost	PSCP	PSCP	PSCP	Update services survey and review of existing drawings prior to commencement	1	4	4	Medium
Construction	Services	Services in the ground - Uncharted	1	4	4	Medium	Impact on programme and cost	Client			Update services survey and review of existing drawings prior to commencement	1	4	4	Medium
Construction	Construction	Availability of skilled labour	1	3	3	Low	Impact on programme and cost	PSCP			Reviewed at procurement stage with fully resourced programme	1	3	3	Low
Construction	Construction	Availability of materials	1	3	3	Low	Impact on programme and cost	PSCP			Reviewed at procurement stage with fully detailed programme	1	3	3	Low
Contract	Contract	Delay in contract award	2	3	6	Medium	Impact on programme and cost	Client			Stage 4 contract drafted during CIG approval period.	2	2	4	Medium
Service	Service	Damage to ecology, services, infrastructure or equipment by construction operations	1	4	4	Medium	Hospital operations disturbed	PSCP			Carefully planned operation method statements	1	3	3	Low
Service	Service	Failure to achieve safe traffic management during construction	2	3	6	Medium	Hospital operations disturbed	PSCP			Detailed traffic management plans to be put in place and monitored	1	3	3	Low
Programme	Archaeological	Delay to construction works: Discovery of archaeological findings within the project site.	2	3	6	Medium	Impact on programme and cost	Client			Desktop survey to be carried out to identify any potential issues.	2	3	6	Medium
Programme	Construction	Construction works at Monklands may impact on the project	2	3	6	Medium	Impact on programme and cost	Client			Regular communication with stakeholders.	1	3	3	Low
Construction	BREEAM	BREEAM requires installation of renewables however this can't be achieved without spending a disproportionate sum of money	3	3	9	Medium	BREEAM Excellent not achieved	Client			Early engagement and communication with HFS.	4	2	8	Medium
Construction	Construction	H&S of public	1	3	3	Low	Impact on programme and cost	PSCP	PSCP	PSCP	Clear segregation of works & public, signage and clear pedestrian routes	1	3	3	Low
Construction	Construction	H&S of work force	1	3	3	Low	Impact on programme and cost	PSCP	PSCP	PSCP	Safety culture on site, inductions, 1 to 1 interviews, 'Ask the Question' workshops	1	3	3	Low
Programme	Construction	Programme implications and final cost of utility connections	2	4	8	Medium	Impact on programme and cost	PSCP	PSCP	PSCP	Refresh of utility quotations and review of programme in relation to utilities	1	4	4	Medium
Construction	Construction	Theft and vandalism	3	2	6	Medium	Impact on programme and cost	PSCP	PSCP	PSCP	Full time site security, secured hoarding	2	2	4	Medium
Contract	Contract	Changes in legislation / tax etc	2	3	6	Medium	Impact on programme and cost	Client			Outwith control of project team. As soon as any changes are known the team will address.	2	3	6	Medium
Construction	Construction	Change in building control officer impacts on building	2	4	8	Medium	Impact on programme and cost	PSCP	PSCP	PSCP	Develop relationship with Building Control	1	4	4	Medium
Procurement	Procurement	Ability to provide access route through live site for delivery and installation of LINAC	2	3	6	Medium	Impact on programme and cost	PSCP	PSCP	PSCP	Detailed planning in conjunction with LINAC supplier	1	3	3	Low
Construction	Ground conditions	Unforeseen mine workings encountered	2	3	6	Medium	Impact on programme and cost	Client			Site investigation reports carried out	2	3	6	Medium
Construction	Construction	Link block tie in to the existing structure. This risk relates to the activities involved with the works specifically to interface with the existing structure, envelope, services and works required within the existing building	4	2	8	Medium	Impact on programme and cost	Client			Survey works to be undertaken, review existing O&M information	3	2	6	Medium
Construction	Construction	Running cables within existing facility. Disruption, unforeseen issues, available space and fire compartmentation issues.	3	3	9	Medium	Impact on programme and cost	Client			Survey works to be carried out to allow inclusion within Target Price	2	3	6	Medium
Service	Service	Maintain clear blue light route	1	5	5	Medium	Hospital operations disturbed	PSCP			Detailed traffic management plans to be put in place and monitored	1	5	5	Medium
Business	Service	Scottish Power cannot provide the required power for the new facility without significant infrastructure works	4	4	16	High	Facility will not be fully functional				Review maximum load calculations Carry out infrastructure works	4	4	16	High

Appendix 9

Schedule of Accommodation

Room Schedule Department	Number	Name	Area	Briefed Area	Level
Communication	COM-01	Stair 1	20.6		Level 0
Communication	COM-02	Stair 2	20.6		Level 0
Communication	COM-03	Lift Lobby	19.8		Level 0
Communication	COM-04	Lift	5.9		Level 0
Communication	COM-05	Link Corridor	72.2		Level 0
Communication	COM-06	Stair 1	20		Level 1
Communication	COM-07	Stair 2	20.3		Level 1
Communication	COM-08	Lift Lobby	15.5		Level 1
Communication	COM-09	Lift	5.9		Level 1
Communication	COM-10	Circulation	128.3		Level 1
Communication	COM-11	Circulation	7.4		Level 1
Communication	COM-12	Stair 3	9.2		Level 1
SUBTOTAL			345.7		

CT Planning & Virtual Sim	CTP-01	Virtual Simulation Room	22.6	24.0 m ²	Level 0
CT Planning & Virtual Sim	CTP-02	Control Room	15.3	12.0 m ²	Level 0
CT Planning & Virtual Sim	CTP-03	CT Simulator	38.5	33.0 m ²	Level 0
CT Planning & Virtual Sim	CTP-04	Assisted Patient Change	5.2	6.0 m ²	Level 0
CT Planning & Virtual Sim	CTP-05	Patient Change	4	2.5 m ²	Level 0
CT Planning & Virtual Sim	CTP-06	Sub Waiting	17.7	16.5 m ²	Level 0
CT Planning & Virtual Sim	CTP-07	Assisted Patient Change	6.2	6.0 m ²	Level 0
CT Planning & Virtual Sim	CTP-08	Mould Room Patient Set-Up	20.7	20.0 m ²	Level 0
CT Planning & Virtual Sim	CTP-09	Mould Room Workshop & Store	25.6	25.0 m ²	Level 0
CT Planning & Virtual Sim	CTP-10	Simulator Anteroom	13.5	12.0 m ²	Level 0
CT Planning & Virtual Sim	CTP-11	CT Accessories Store	12.2	12.0 m ²	Level 0
CT Planning & Virtual Sim	CTP-12	CT Equipment Store	12.1	12.0 m ²	Level 0
CT Planning & Virtual Sim	CTP-13	Accessible WC	4.7	4.5 m ²	Level 0
CT Planning & Virtual Sim	CTP-14	WC	2.4	2.0 m ²	Level 0
CT Planning & Virtual Sim	CTP-15	WC	2.4	2.0 m ²	Level 0
CT Planning & Virtual Sim	CTP-16	Clinical Assessment Room	14.1	12.0 m ²	Level 0
CT Planning & Virtual Sim	CTP-17	Clean Utility	12	12.0 m ²	Level 0
CT Planning & Virtual Sim	CTP-18	Linen Store	6.8	6.0 m ²	Level 0
CT Planning & Virtual Sim	CTP-19	Dirty Utility	10.5	10.0 m ²	Level 0
CT Planning & Virtual Sim	CTP-20	Circulation	65.6		Level 0
CT Planning & Virtual Sim	CTP-21	Circulation	29.6		Level 0
CT Planning & Virtual Sim	CTP-22	Seminar Room	22.4	20.0 m ²	Level 1
SUBTOTAL			364.1		

Entrance Facilities	ENT-01	Reception	14.4	10.0 m ²	Level 0
Entrance Facilities	ENT-02	Waiting	18	10.0 m ²	Level 0
Entrance Facilities	ENT-03	Waiting	34	35.0 m ²	Level 0
Entrance Facilities	ENT-04	Waiting	36.4	10.0 m ²	Level 0
Entrance Facilities	ENT-05	Vending Machine	8.1	6.0 m ²	Level 0
Entrance Facilities	ENT-06	Accessible WC	6.8	4.5 m ²	Level 0
Entrance Facilities	ENT-07	WC	3.1	2.5 m ²	Level 0
Entrance Facilities	ENT-08	WC	3	2.5 m ²	Level 0
Entrance Facilities	ENT-09	Information Bay	0.8		Level 0
Entrance Facilities	ENT-10	Wheelchair Store	8.5	8.0 m ²	Level 0
Entrance Facilities	ENT-11	Entrance Lobby	20.6		Level 0
Entrance Facilities	ENT-12	Circulation	138.7		Level 0
Entrance Facilities	ENT-13	Circulation	4.2		Level 0
Entrance Facilities	ENT-14	Stationary Store	8.4	6.0 m ²	Level 1
SUBTOTAL			305		

Room Schedule						
Department	Number	Name	Area	Briefed Area	Level	
IT Infrastructure	ITC-01	IT Node Room	11.1	9.0 m ²	Level 0	
IT Infrastructure	ITC-02	IT Node Room	12	10.0 m ²	Level 1	
SUBTOTAL			23.1			
Offices	OFF-01	Interview Room	10.5	10.0 m ²	Level 1	
Offices	OFF-02	Interview Room	9.9	10.0 m ²	Level 1	
Offices	OFF-03	Shared Office	49	40.0 m ²	Level 1	
Offices	OFF-04	Circulation	31.8		Level 1	
SUBTOTAL			101.2			
Physics Planning Suite	PHY-01	Voluming Room	25.6	25.0 m ²	Level 1	
Physics Planning Suite	PHY-02	Treatment Planning Room	32.9	32.0 m ²	Level 1	
Physics Planning Suite	PHY-03	Plan Review / VC Room	25.7	25.0 m ²	Level 1	
Physics Planning Suite	PHY-04	Specialist Planning Room	10.7	10.5 m ²	Level 1	
Physics Planning Suite	PHY-05	Specialist Planning Room	10.7	10.5 m ²	Level 1	
Physics Planning Suite	PHY-06	Circulation	41.1		Level 1	
SUBTOTAL			146.7			
Plant	PLT-01	HV Plant	24.3		Level 0	
Plant	PLT-02	Plant Room	56.4		Level 0	
Plant	PLT-03	Plant Room Escape	9.3		Level 0	
Plant	PLT-04	Plant	199.3		Level 1	
Plant	PLT-05	Escape	9.5		Level 1	
Plant	PLT-06	Plant	120.5		Level 1	
Plant	PLT-07	Plant	81.7		Level 1	
Plant	PLT-8	Plant	4		Level 0	
Plant	PLT-9	Riser	4.1		Level 1	
Plant	PLT-10	Riser	5		Level 1	
SUBTOTAL			514.1			
Staff Facilities	STF-01	Rest Room	17.9	15.0 m ²	Level 1	
Staff Facilities	STF-02	WC	2.4		Level 1	
Staff Facilities	STF-03	WC	2.6		Level 1	
Staff Facilities	STF-04	Accessible WC / Ch.	6.7		Level 1	
Staff Facilities	STF-05	WC	2.5		Level 1	
Staff Facilities	STF-06	Sh.	2.5		Level 1	
Staff Facilities	STF-07	Male Staff Change	11.9	18.0 m ²	Level 1	
Staff Facilities	STF-08	Circulation	3		Level 1	
Staff Facilities	STF-09	Female Staff Change	22	30.0 m ²	Level 1	
Staff Facilities	STF-10	Sh.	2.5		Level 1	
Staff Facilities	STF-11	WC	2.4		Level 1	
Staff Facilities	STF-12	WC	2.4		Level 1	
Staff Facilities	STF-13	Circulation	4.3		Level 1	
SUBTOTAL			83.1			
Stores	STR-01	Disposal Hold	10.4	10.0 m ²	Level 0	
Stores	STR-02	Cleaner Store	11	10.0 m ²	Level 0	
Stores	STR-03	Cleaners Store	10	10.0 m ²	Level 1	
SUBTOTAL			31.4			

Room Schedule

Department	Number	Name	Area	Briefed Area	Level
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Tech Support	TSP-01	Heavy Equipment Store	12.1	12.0 m ²	Level 0
Tech Support	TSP-02	Dosimetry Store	13.5	12.0 m ²	Level 0
Tech Support	TSP-03	Storage for Spares	21.5	12.0 m ²	Level 0
Tech Support	TSP-04	Laboratory & Workshop	30.7	30.0 m ²	Level 1
Tech Support	TSP-05	Circulation	15.9		Level 1
SUBTOTAL			93.7		

Treatment Suite	TRT-01	Radiotherapy Treatment & Bunker	160.4	145.0 m ²	Level 0
Treatment Suite	TRT-02	Radiotherapy Treatment & Bunker	159.2	145.0 m ²	Level 0
Treatment Suite	TRT-03	Radiotherapy Treatment & Bunker	168	145.0 m ²	Level 0
Treatment Suite	TRT-04	Control Area	17.8	18.0 m ²	Level 0
Treatment Suite	TRT-05	Control Area	17.9	18.0 m ²	Level 0
Treatment Suite	TRT-06	Assisted Patient Change	5.8	6.0 m ²	Level 0
Treatment Suite	TRT-07	Accessible WC	5.7	4.5 m ²	Level 0
Treatment Suite	TRT-08	Sub-Wait	18.8	18.0 m ²	Level 0
Treatment Suite	TRT-09	Assisted Patient Change	5.5	6.0 m ²	Level 0
Treatment Suite	TRT-10	Accessible WC	5.7	4.5 m ²	Level 0
Treatment Suite	TRT-11	Accessible WC	5.7	4.5 m ²	Level 0
Treatment Suite	TRT-12	Assisted Patient Change	5.8	6.0 m ²	Level 0
Treatment Suite	TRT-13	Control Area	20.1	18.0 m ²	Level 0
Treatment Suite	TRT-14	Sub-Wait	10.2	9.0 m ²	Level 0
Treatment Suite	TRT-15	Circulation	11.2		Level 0
Treatment Suite	TRT-16	Circulation	71.3		Level 0
Treatment Suite	TRT-17	Circulation	11.2		Level 0
Treatment Suite	TRT-18	Circulation	35.6		Level 0
Treatment Suite	TRT-19	Circulation	11.5		Level 0
Treatment Suite	TRT-20	On Treatment Review	12.2	12.0 m ²	Level 0
Treatment Suite	TRT-21	On Treatment Review	12.6	12.0 m ²	Level 0
Treatment Suite	TRT-22	On Treatment Review	12.6	12.0 m ²	Level 0
Treatment Suite	TRT-23	Nursing Store	7	6.0 m ²	Level 0
Treatment Suite	TRT-24	Dressings Room	13.6	13.0 m ²	Level 0
Treatment Suite	TRT-25	Quiet Room	10.2	10.0 m ²	Level 0
Treatment Suite	TRT-26	Sub Wait	12.3	12.0 m ²	Level 0
Treatment Suite	TRT-27	Circulation	39.4		Level 0
Treatment Suite	TRT-28	Resus Trolley	1	1.0 m ²	Level 0
Treatment Suite	TRT-29	Pre-treatment Area	20.1	20.0 m ²	Level 1
SUBTOTAL			888.2		

Unallocated	132	Unallocated	3.7		Level 0
SUBTOTAL			3.7		

TOTAL - Excluding Planning Allowance 2595

GIFA - LEVEL 0			1980.9		
GIFA - LEVEL 1			1090.8		
TOTAL GIFA			3071.7		

Appendix 10

Capacity and Utilisation Assumptions

WoS Satellite Radiotherapy Facility Patient Flow and Radiotherapy Activity Analysis

Patient Flows

To support the Options Appraisal process, which will help determine the preferred site to host the new WoS Satellite Radiotherapy Facility, the Project Board was keen to explore and understand the proximity of all WoS postcodes to each radiotherapy site – the Beatson Cancer Centre, which currently provides all radiotherapy services to the WoS population and the two proposed sites, which will potentially host the satellite facility i.e. Forth Valley Royal Hospital and Monklands District General Hospital. Crucial to any decisionmaking about the patient flows will be the need to align the flows with the available capacity at both the Beatson Cancer Centre and the Satellite Facility. Assumptions about the available capacity at the satellite facility can be found in Appendix 2.

Car Travel

Appendix 1 contains 3 maps, which demonstrate the results of the traveltimes analysis. Map 1 shows, which of the three sites each of the WoS postcodes is closest to. Map 2 shows which of two sites, the Beatson v's FVRH, each of the WoS postcodes is closest to and finally Map 3 shows, which of the two sites, the Beatson v's Monklands each of the WoS postcodes is closest to. All three maps clearly demonstrate that more postcodes are closer to Beatson followed by Monklands and then FVRH and this is also the case when comparing just two sites against each other. All of these maps have been composed using identified car travel time journeys.

To further support the results of the analysis of the information contained in the maps, Table 1 provides further consolidated details of the travel times relating to the postcodes within each of the WoS health boards to the 3 sites.

Table 1

Health Board	Mean Travel Time (mins)			Range of Travel Time (mins)			Mean variance in travel time F v's M (mins)
	B	F	M	B	F	M	
Ayrshire & Arran	60	89	77	39-130	67-180	50-170	13 to F
Forth Valley	66	37	56	30-100	8-80	30-100	19 to M
Greater Glasgow & Clyde	26	49	39	7-60	20-100	15-80	11 to F
Highland	119	148	141	63-233	88-251	86-253	7 to F
Lanarkshire	42	42	28	29-70	20-75	9-60	13 to F

Public Transport

As well as comparing the anticipated car travel times to the three sites, further analysis was carried out to identify the potential travel times from some postcodes to the three sites using public transport. Table 2 details this smaller analysis and is an attempt to give an indication of the impact of requiring to travel to the 3 sites by public transport. The public transport times are composed from a combination of walking, bus or rail either two or all three together.

Table 2

Health Board	Postcode	Car Travel Time (mins)			Public Transport Travel Time (mins)		
		B	F	M	B	F	M
Ayrshire & Arran	KA1	41	71	58	95	150	125
	KA7	64	93	78	120	175	155
	KA8	60	85	75	95	145	130
	KA12	55	82	70	80	140	115
Forth Valley	FK8	55	28	50	120	80	145
	FK12 5	65	35	55	115	75	120
	FK15	68	35	55	95	60	105
	G63 0 (Part GG&C)	45	50	65	85	115	120
Greater Glasgow & Clyde	G32	26	35	20	50	95	65
	G46	25	50	40	60	115	95
	G64	23	35	30	75	90	100
	G78	33	59	48	80	115	105
	G83	42	65	60	120	200	165
	PA5	28	58	48	65	120	105
	PA15	44	76	64	80	115	100
Highland	G84	63	88	86	85	155	135
Lanarkshire	G75	40	52	40	85	135	105
	ML3	35	40	25	80	125	85

	ML8	48	53	35	90	135	90
	ML12 6	70	75	60	105	150	120

Radiotherapy Catchment

If the allocation of radiotherapy provision was allocated based on this simple travel time analysis Tables 3 and 4 detail the assumptions that would be made in relation to the allocation of postcodes to the radiotherapy centre/facility.

Table 3

Health Board	Beatson	Forth Valley Royal Hospital
Ayrshire & Arran	All A&A postcodes	
Forth Valley	G63 0, G63 9	All other forth valley postcodes
Greater Glasgow & Clyde	All GG&C postcodes apart from those highlighted in the next column	G65 9, G66 8, G67 4
Highland	All Argyll & Bute postcodes	
Lanarkshire	G71, G72 0, G74, G75, ML1, ML10 6, ML12 6, ML2, ML3, ML4, ML5, ML8, ML9	E47 9, G65 0, G67, G68, ML6, ML7
Equidistant postcodes		G71 7, ML11

Table 4

Health Board	Beatson	Monklands
Ayrshire & Arran	All A&A postcodes apart from those mentioned in the next column	KA17 0, KA18 3
Forth Valley	FK20 8, G63 0, G63 9	All other FV postcodes
Greater Glasgow & Clyde	All GG&C postcodes apart from those mentioned in the next column	G32, G33, G34, G45, G65 9, G66 8, G67 4, G69, G71 7, G72 G73
Highland	All Argyll & Bute postcodes	
Lanarkshire		All Lanarkshire postcodes
Equidistant postcodes		G31, G66

Patient Activity

As well as the completion of the travel time analysis there is a need to understand the potential radiotherapy activity that would be generated from each health board. This information would assist the decisionmaking process when allocating the anticipated radiotherapy demand in 2017 across the Beatson Cancer Centre and the satellite facility wherever it is chosen to be sited. The allocation of the demand needs to ensure that the capacity at the satellite facility is fully utilised and that constraints at the Beatson Cancer Centre are significantly reduced.

During the work to explore the opportunities for a central Scotland satellite facility a number of assumptions were agreed for the available capacity at the facility and these will be used to support this work. These assumptions are contained in Appendix 2 and have been further supported with agreements reached at the Clinical Pathways meeting, which took place on the 11th January 2013.

Activity assumptions have been initially based on 2005-09 incidence data for every postcode in WoS and calculated using the assumptions contained in appendix 2. Postcodes were consolidated to help ensure that no patient identifiable information was able to be accessed and secondly to improve the accuracy of the incidence figures Table 5 details the total radiotherapy demand, which is anticipated to be generated from each health board for the four tumour types of Lung, Breast, Prostate and Rectal.

Table 5

Health Board	Anticipated No. of #'s in 2017
Ayrshire & Arran	11500
Forth Valley	8700
Greater Glasgow & Clyde	37200
Highland (Argyll & Bute)	1260
Lanarkshire	14800
Total	73,460

The proportion of the total anticipated fractionations which would be expected to be generated by the four tumour types is as follows – Lung 28%, Breast 35%, Prostate 28% and Rectal 9%.

Radiotherapy Catchment

This additional analysis can be used to further assist in identifying and agreeing the activity that will continue to be provided by the Beatson Cancer Centre and the activity, which could reasonably be allocated to be provided by the satellite facility. Table 6 details the the allocated number of fractionations that would occur for either of the potential sites, which may host the satellite facility. This utilises the information contained in Tables 3 and 4, which details the postcodes closest in proximity to the three sites. The decision was taken to also allocate those postcodes identified as being equidistant to the satellite facility site and the Beatson Cancer Centre to the satellite facility.

Table 6

Site	Fractionations
FVRH	13500
Monklands	32200

Using this approach either results in an underutilisation of the new facility if it were to be based at FVRH or places too much demand on the facility if it were to be sited at Monklands DGH. One of the aims of the development of the satellite facility is to ensure that patients are not in anyway disadvantaged by being asked to travel to the satellite facility rather than the Beatson Cancer Centre. Table 6 would indicate that the equivalent delivery of approx. 12,000 fractionations if the satellite facility was sited at Forth Valley Royal Hospital would be to patients that would be required to travel further than if they were required to go to the Beatson Cancer Centre as currently occurs.

Allocation Based on Health Board of Residence

One alternative approach to consider for the allocation of anticipated demand to the facilities is to assign whole health boards to each facility and flex as required. One suggestion is to allocate the same anticipated demand to the facility, whether it is based at FVRH or Monklands DGH. Table 7 details the impact this would have.

Table 7

Health Board	Beatson allocation	FVRH/Monklands allocation
Ayrshire & Arran	11500	
Forth Valley		8700
Greater Glasgow & Clyde	37200	
Highland (Argyll & Bute)	1260	
Lanarkshire		14800
Total	49,9600	23,500

Although this approach more accurately matches the demand to the available capacity at the satellite facility, there would still be an under utilisation. Not included in the allocation to FVRH/Monklands DGH are those GG&C postcodes, which were identified as being closer in proximity to FVRH and Monklands DGH some of which were consistent for both. If it was assumed that all of these postcodes were allocated to FVRH/Monklands DGH, these would account for an additional 6,800 fractionations taking the allocation to the satellite facility to 28,300 or 93% utilisation. This would place too much demand on the satellite

facility but provides a basis in which to flex some of those postcodes on the boundary of proximity to both centres as appropriate to help ensure its optimal and safe utilisation.

A Third Option based on Flexible Catchments

The third option available to the Project Board is to have a flexible approach to the access to the available radiotherapy provision recognising the proximity and ease of access of all postcodes to the available provision and allocating agreed catchment areas as such e.g. there are a number of postcodes in Lanarkshire that would find it easier to access radiotherapy provision at the Beatson Cancer Centre and similarly some postcodes in Greater Glasgow & Clyde would find it easier to access radiotherapy provision at the satellite facility whatever site is chosen.

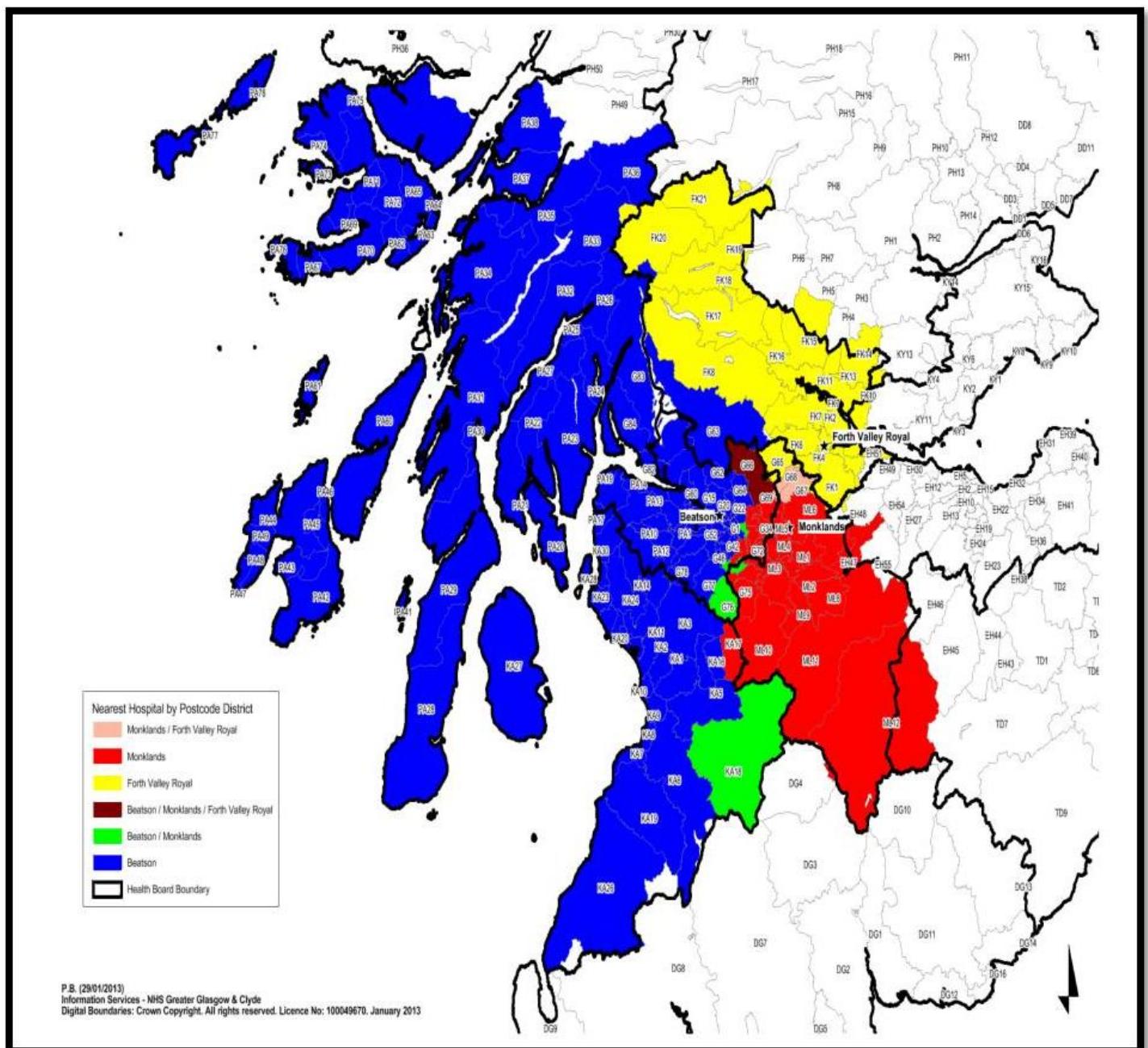
The Satellite Radiotherapy Facility Project Board are asked to note the content of this paper to assist them in identifying the preferred site to host the new facility.

Gordon McLean

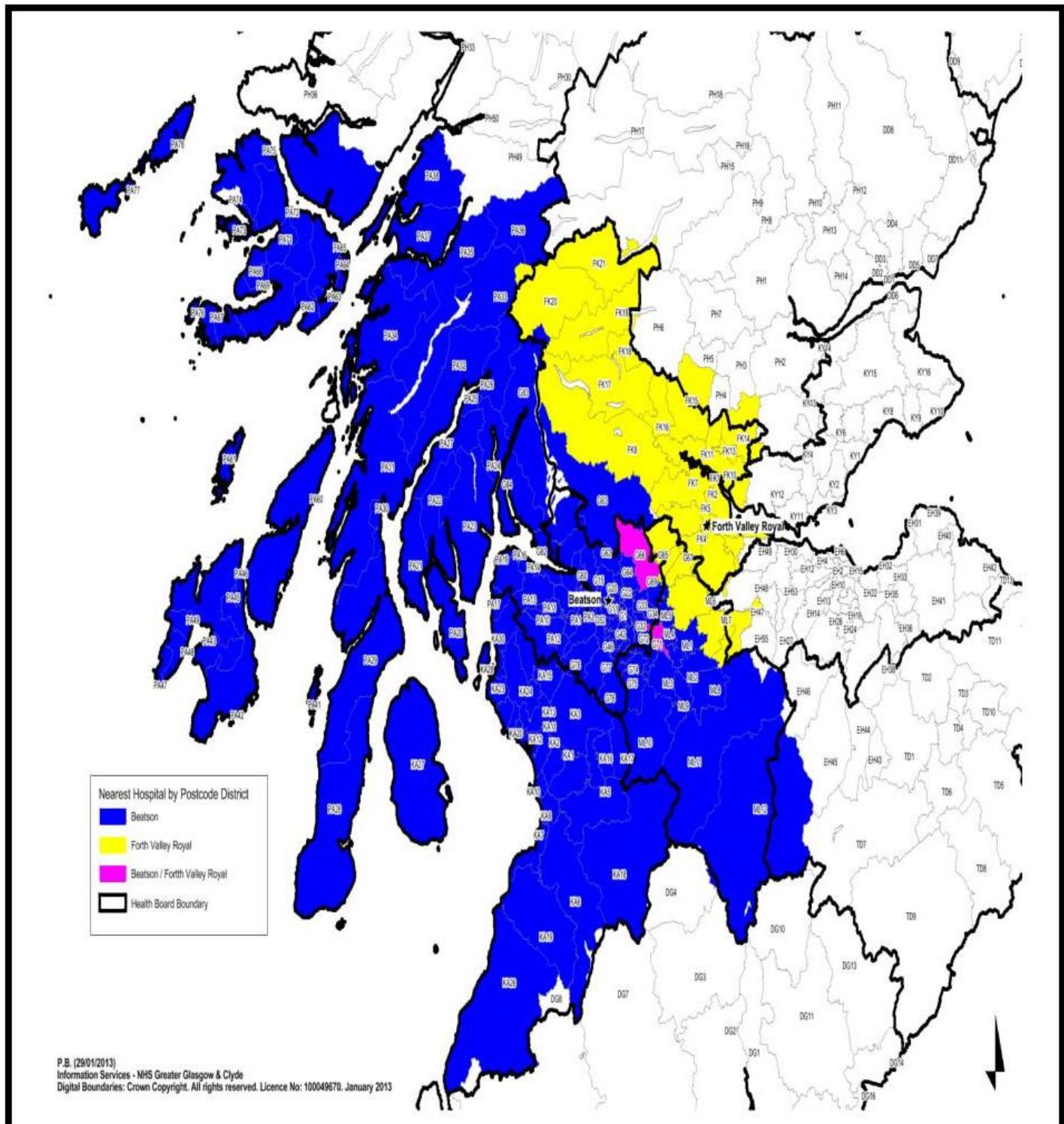
Thanks go to Paula Barton, David Morrison and Gwendolyn Allardice of NHS Greater Glasgow & Clyde for the provision of the information to support the production of this paper.

Appendix 1

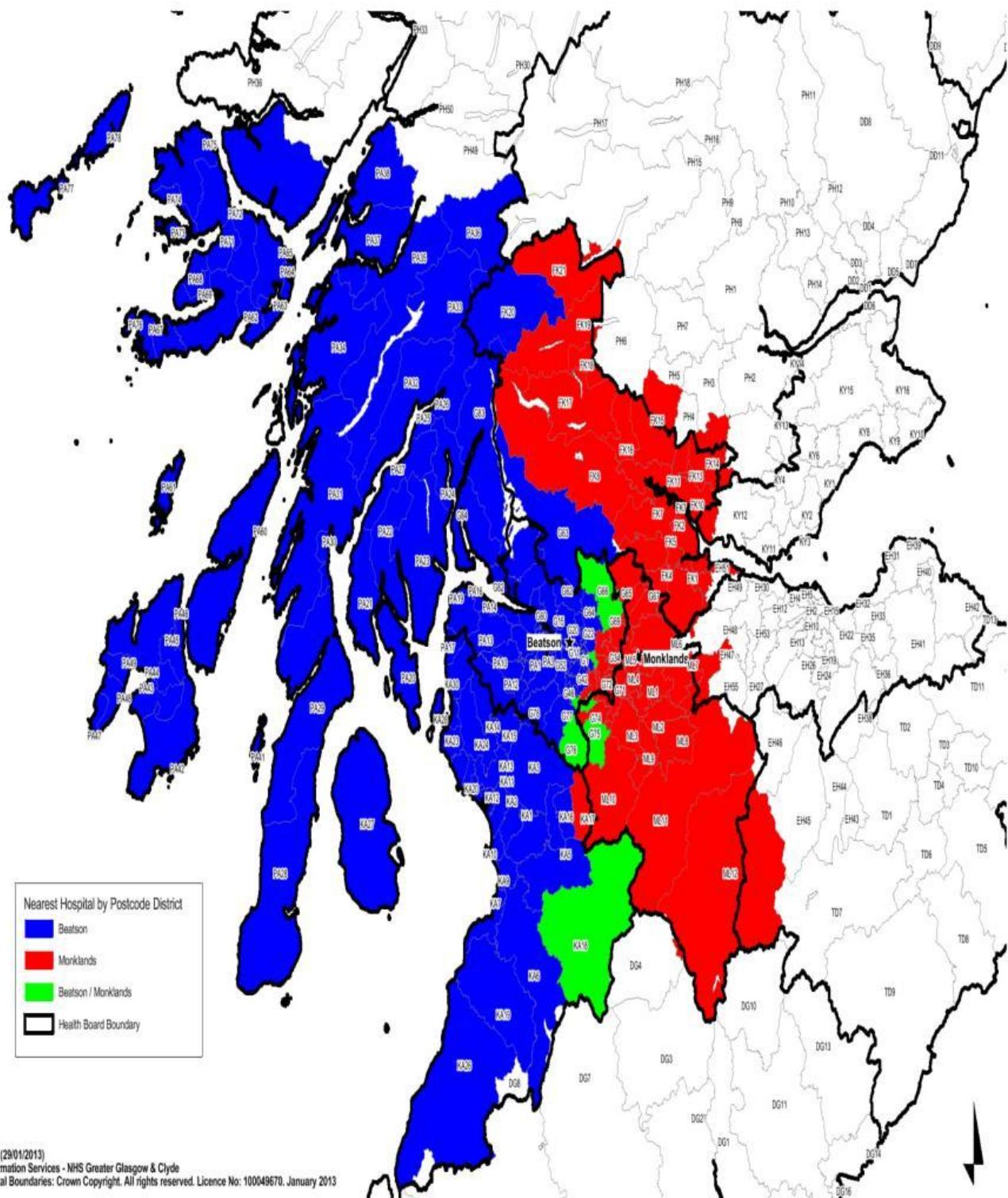
Nearest Site to the WoS Postcodes



WoS Postcode Proximity to Beatson vs FVRH



WoS Postcode Proximity to Beatson vs Monklands



Appendix 2

West of Scotland Satellite Radiotherapy Facility						
Agreed Capacity Assumptions						
Variables		Number		Additional Information		
Anticipated No. of Linear Accelerators (LinAcs)		3 (2 from proposed business case)		Site needs to have flexibility to expand to a 4th LinAc if required.		
No. of fractions per hour		4.5		This is the average number of expected fractions per hour. Clinical complexity may lead to either a smaller or larger number of fractions per hour.		
No. of operating hours per day		9		Opportunity for extended working will need to remain under review.		
No. of operating days per week		5				
No. of operating weeks per year		50		Each machine will need to go through a total 10 day period of maintenance throughout the year, which is normally performed out of hours and in blocks of 2 days at a time.		
Anticipated Total No. of Fractions Available Per year		30,375 #'s		10,125 #'s for one LinAc		
Optimum Capacity Utilisation - 85% per annum		25,819 #'s		8606 #'s for one LinAc		
Agreed Demand Assumptions						
Tumour Site	Anticipated 2017 growth	%IMRT	Anticipated DCE growth	% # Rate	Radical # rate & No. of #'s	Palliative # rate & No. of #'s
Lung	0%	90%	5%	60%	40% & 22#'s	60% & 5#'s
Breast	8%	100%	10%	73%	95% & 19#'s	5% & 5#'s
Prostate	20%	40%	20%	60%	90% & 20#'s	10% & 5#'s
Rectal	10%	20%	0%	58%	60% & 25#'s	40% & 5#'s

N.B. 1) This analysis assumes that 1 LinAc will be transferred to the satellite facility from the Beatson Cancer Centre to fulfil the complement of 3 LinAcs at the new facility.

N.B. 2) IMRT rate is a combination of %VMAT & Forward Planned IMRT.

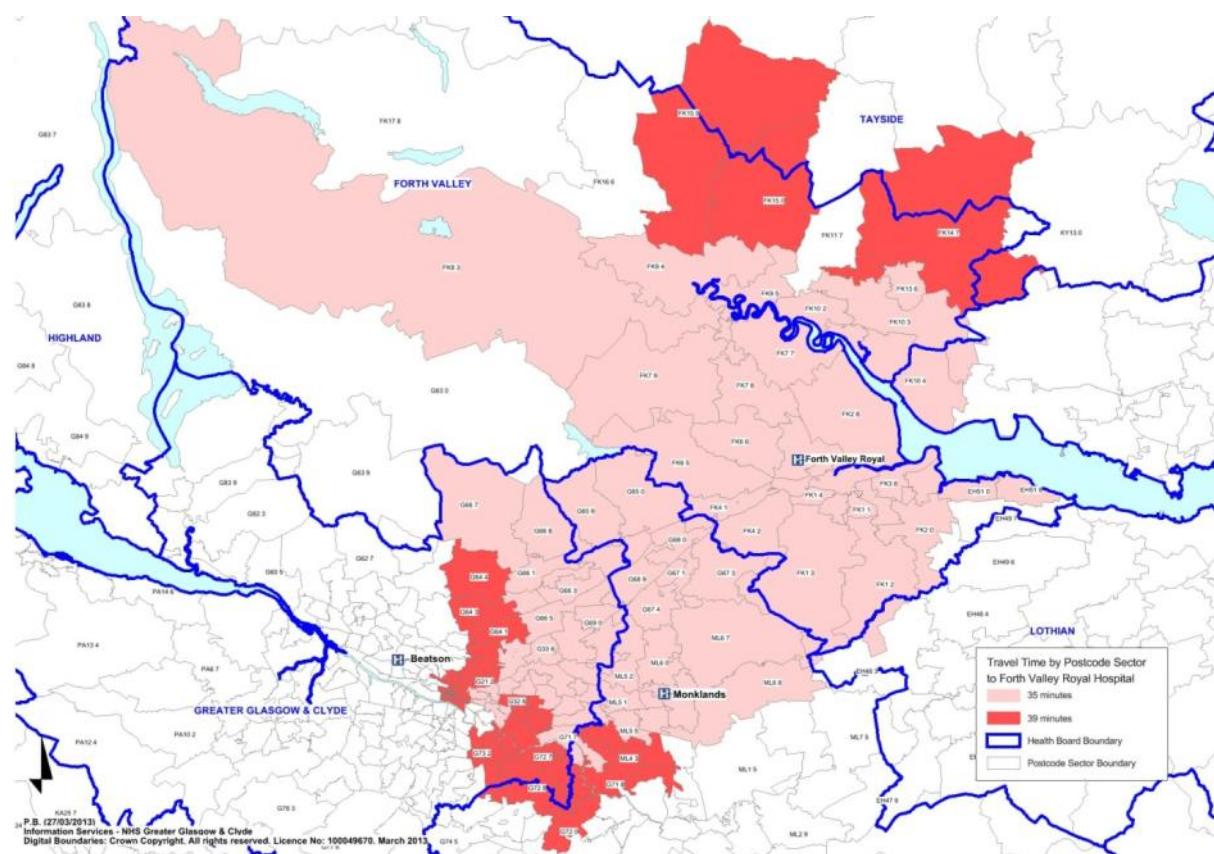
WoS Satellite Radiotherapy Travel time Boundaries – Additional Information

The following maps provide additional travel time information to each of the potential sites where the WoS Satellite Radiotherapy facility will be based. This information is to be used to support the options appraisal process in deciding the preferred site.

Shortest Travel Time Boundary

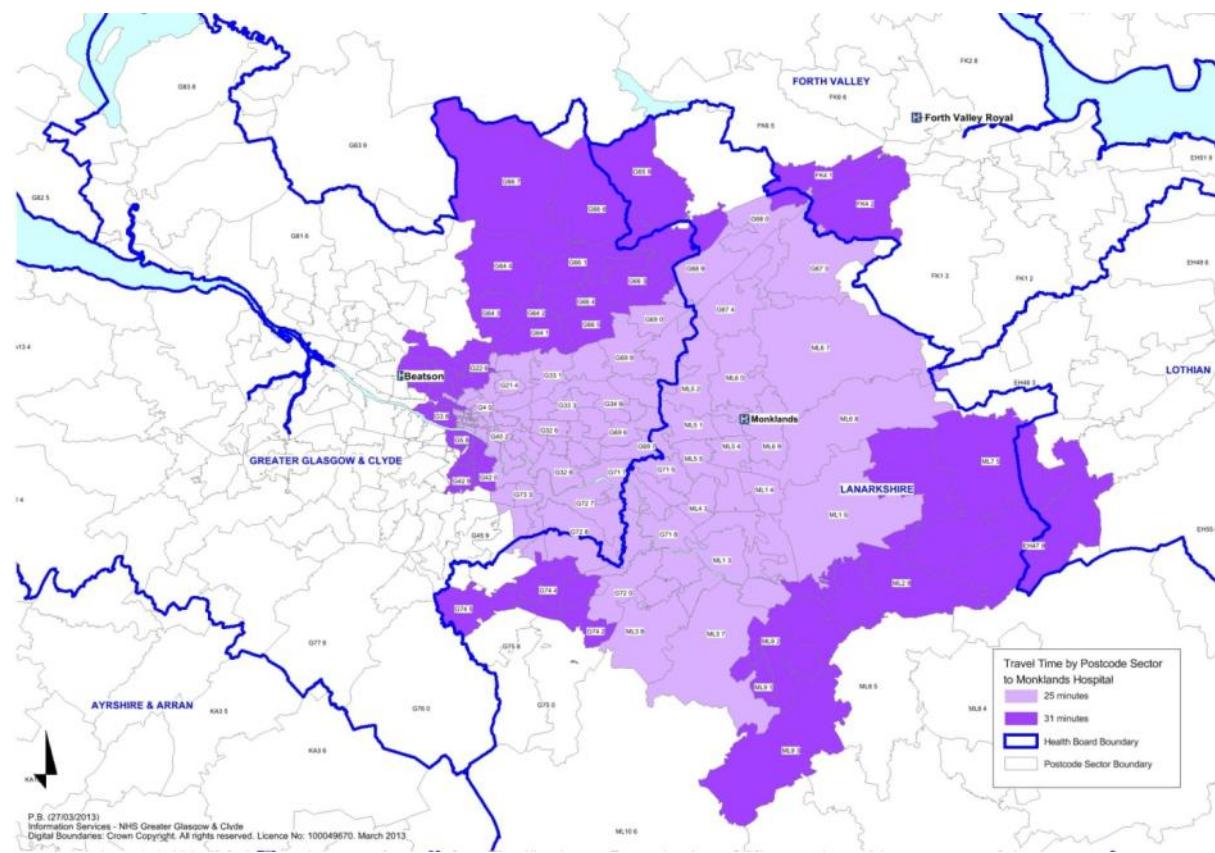
The following maps detail the car travel time boundaries surrounding each of the preferred sites, which would generate the required demand for a 2 and 3 LinAc facility. These maps are based purely on car travel times from consolidated West of Scotland postcodes and are not focussed on specific health boards. It should be noted that with consolidated postcodes there will be large areas but these will also be largely rural.

Forth Valley Royal Hospital



To generate the required demand for a 2 and 3 LinAc facility at Forth Valley Royal Hospital based solely on proximity to the sites, a boundary of 35 mins (pink) and 39 mins (red) respectively would be required. As highlighted above the consolidated postcode of FK8 is large but rural and the majority of the demand generated from this postcode lies within the average 35 mins travel time boundary.

Monklands District General Hospital



To generate the required demand for a 2 and 3 LinAc facility at Monklands District General Hospital based solely on proximity to the sites, a boundary of 25 mins (lilac) and 31 mins (purple) respectively would be required.

It would be possible to flex some of the postcodes used in accessing each site e.g. by identifying specific full postcodes within the consolidated ones that will sit within the identified boundaries for each hospital however this would make it more difficult to manage.

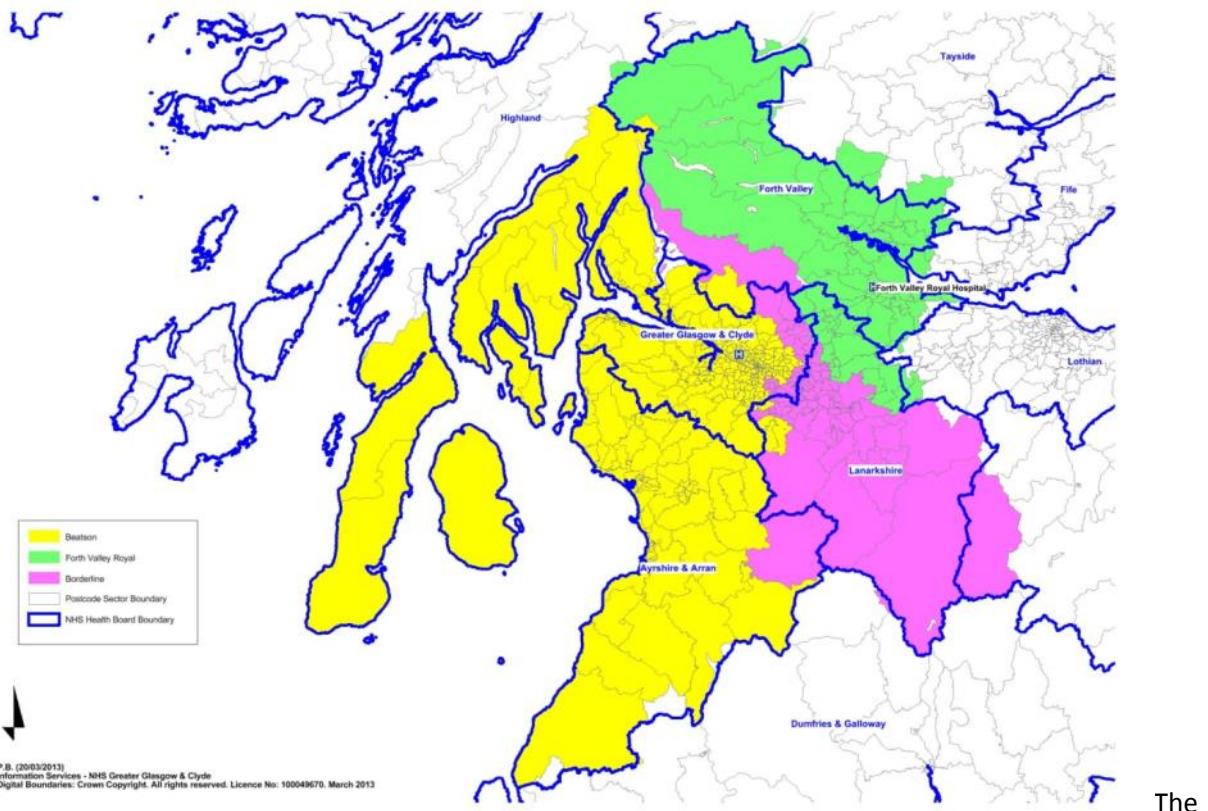
Finally it needs to be considered if this approach was to be applied to agree the catchment area for the satellite facility how feasible it would be to expect those patients living in closer proximity to the Beatson Cancer Centre to travel further to the satellite facility in order to generate the required demand.

3 LinAc Facility Proximity Boundary

The following maps detail a proposed boundary for the satellite facility based on proximity to the proposed sites versus proximity to the Beatson Cancer Centre and to secondly to generate the required demand to ensure full utilisation of the facility.

As with the previous maps these have been based on consolidated postcodes therefore there will be areas based on a single postcode, which will be largely rural and an average travel time has been used.

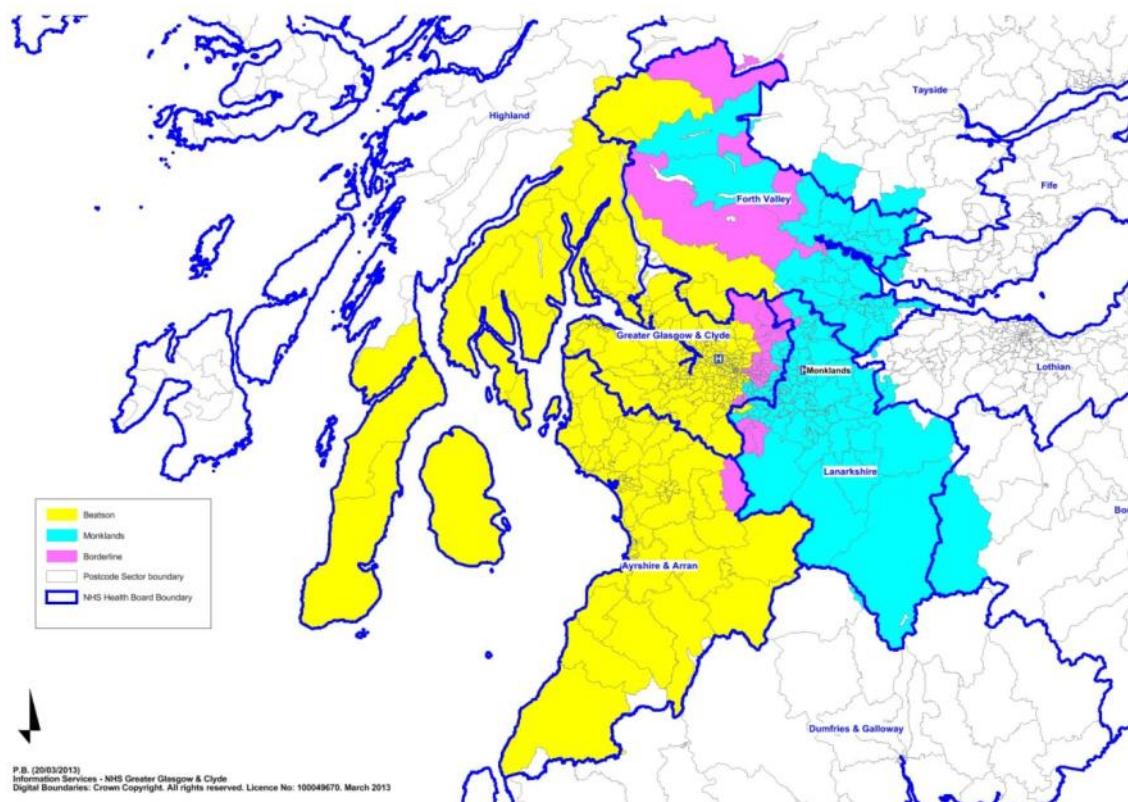
Forth Valley Royal Hospital



The green area represents those health boards, which have a shorter car travel time to FVRH compared to the Beatson, with the yellow area representing those that are closer to the Beatson. The pink area represents those postcodes, which sit **closer** to the Beatson but would be required to be reallocated to travel to FVRH for radiotherapy to help generate the required demand to fully utilise a 3 LinAc facility. Close consideration would be required how reasonable it would be to expect patients to travel further than they currently have to for radiotherapy services.

Monklands District General Hospital

The aqua area represents those health boards, which have a shorter car travel time to Monklands Hospital compared to the Beatson, with the yellow area representing those that are closer to the Beatson. The pink area represents those postcodes, which also sit **closer to Monklands Hospital** but would be required to continue travel to the Beatson Cancer Centre for radiotherapy to help prevent too much demand being directed to a satellite facility at Monklands. As with all the maps it would be possible to flex the postcodes that are identified to access each facility.



Appendix 11

Benefits Appraisal Scoring

A Non- Financial Benefits Appraisal Workshop was undertaken on 15th April 2013 at the Medical Education Training Centre, Kirklands Hospital to explore and examine the short listed options and to inform the development of the preferred option for the Facility. A group of stakeholders comprising clinical departmental staff and representatives of each Health Board participated along with PSCP presence to ensure a consistent approach and appropriate technical input was available.

This Workshop took the form of a scoring exercise against the set of benefits criteria established under section 2.9.

The 3 Options to be appraised were:

Short List of Options

- Maintain Status Quo
- NHS Lanarkshire - Monklands District General Hospital
- NHS Forth Valley - Forth Valley Royal Hospital

The Workshop

The Workshop began with an introduction from Heather Knox (Director of Regional Planning and Sponsor of the WoSSRF), which established the outline for the session and key elements for consideration.

Garry Currie (Head of Radiotherapy Physics, BWoSCC), Gordon McLean (Service Improvement Manager, West of Scotland Regional Planning Group) and Peter Moran (PSCP Architect) then gave short presentations on Future Radiotherapy Demand, Patient Flows and Site Logistics respectively to inform the audience prior to moving to the scoring process.

Pairwise Comparison

The next part of the process, facilitated by the PSC Project Manager, saw the undertaking of a Pairwise comparison of the Benefits Criteria to establish a weighting to carry forward to scoring the options.

A full description of the criteria can be found in Section 2.9, however a summary is provided below:

Description of Benefits

Clinical Benefit	Having access to the full range of acute services required to support patients attending a satellite radiotherapy facility.
Patient Access	The number of patients from the target radiotherapy treatment populations who benefit in terms of being closer to the new location than to existing treatment sites.
Strategic Fit	The extent to which the satellite facility improves the current and future capacity in the West of Scotland and relieves capacity pressure on existing Beatson Centre in the medium term i.e. 5-10 years
Site Logistics	The extent to which the building meets a range of factors with regard to its impact on both the patient journey and the physical site.
Staffing	The impact of opening a Satellite Facility on staff from both the Current Facility and New Facility perspective

Through a considered debate the following results were established:

Option Scoring

criteria		A	1	0	0	0	1	4
A	Clinical Benefit	A	1	0	0	0	1	4
B	Patient Access	B	1	2	0	0	3	1
C	Strategic Fit	C	1	1	1	0	3	1
D	Site Logistics	D	0	0	0	0	0	5
E	Staffing	E	1	0	1	1	3	1

mathematical weighting of criteria					factor
A	B	C	D	E	10.00
10	30	30	0	30	10.00

In review of these results it was felt by the group that whilst they were a fair and accurate reflection of the debate, the non-weighting of criteria D was not correct as the issue of connectivity was of significant importance to the selection of a site.

To this end, it was decided that whilst the criteria of staffing was worthy of recognition and a higher weighting, it was not on a par with Patient Access and Strategic Fit and therefore 10 points should be moved from (E) Staffing to (D) Site Logistics.

Therefore the weighting to be carried into the scoring of the options was as follows:

Benefits Weighting

A	B	C	D	E
10	30	30	10	20

The Scoring

Having confirmed the weighting for the criteria the short listed options were subject to scoring under a range of 1-5 as follows:

Scoring Description

5	Achieves all elements
4	Achieves most elements, a few gaps
3	Achieves average elements
2	Achieves a few elements, many gaps
1	Achieves minimal elements

A full discussion was held on the individual benefits criteria in relation to each site which is summarised as follows:

Clinical Benefit

The group felt that it would be difficult to split the Monklands and Forth Valley sites under this criterion as the Satellite Facility built on either site would provide the same 'state of the art' radiotherapy services, therefore an identical mark was given to both.

Patient Access

Discussion on this criterion centred around the information provided earlier on patient flows, with the Monklands site identified as being more preferable to Forth Valley with regards to the number of patients able to travel to the Satellite Facility more quickly than to the BWoSCC and also in improving access to radiotherapy treatment for the specified incident population. The difference between the two sites was seen by the majority of the group as so significant that Monklands was scored two points higher than Forth Valley – the biggest scoring difference of the exercise between the two.

Strategic Fit

Whilst both Monklands and Forth Valley sites were viewed by the group as similar in terms of their expansion potential and achievable wider benefits such as clinical expertise and teaching development, building the Satellite Facility at Forth Valley would involve a larger number of people being asked to travel further for treatment in order to satisfy the required fractionation targets than if it was positioned at Monklands. It was therefore decided to award Monklands a higher score under this criterion.

Site Logistics

The key area of debate under this criterion was the ability of the Satellite Facility to physically connect into an existing building. Whilst design work has yet to be undertaken to understand exactly how this would be achieved, it was clear that the Monklands site provided a potentially easier solution than the Forth Valley site as a fully covered bridge or tunnel extending to circa 80m would be required in order to connect to the existing Forth Valley hospital, whereas the

proposed Monklands site is significantly closer to the existing hospital building. On this basis it was decided that Monklands should receive a higher score.

Staffing

There was significant debate around this criterion, due mainly to the workforce planning information being currently under development. Despite a number of differing viewpoints being offered in the discussion, it was ultimately decided that without a fixed ‘blueprint’ it was difficult to separate one site from another and therefore they should be scored equally.

A complete summary of the scores can be seen in Table 27 below:

Table 27: Benefit Scores

	benefit criteria	Do Minimum	Monklands	Forth Valley
A	Clinical Benefit	4	5	5
B	Patient Access	2	4	2
C	Strategic Fit	1	4	3
D	Site Logistics	2	4	3
E	Staffing	4	3	3
	Totals	13	20	16

When the weighting established in the previous exercise was applied to the scores, the results were as follows:

Table 28: Scoring Results

	option	weighted score	ranking
1	Status Quo	230	3
2	Monklands	390	1
3	Forth Valley	290	2

It is important to reiterate that there would be no capital costs associated with maintaining the status quo and no material backlog costs have been identified within the current radiotherapy facilities at the BWoSCC. As noted within the ‘Main Business Options’ section of this document, maintaining the status quo is not a viable option as the BWoSCC is currently operating at near to full capacity and as such the Status Quo option has been kept in the process as a benchmark comparison.

Sensitivity Analysis

In order to test the results of the Benefits Appraisal it is useful to assess the sensitivity of the scores to changes in key variables and assumptions.

This exercise provides an indication as to the elements of the evaluation that are critical to influencing the outcome.

Sensitivity Analysis should therefore be undertaken to evaluate what the ranking might be if some of the weights and/ or scores were changed as follows:

- Equal weighting applied to all criteria i.e. all 5 criteria weighted at 20
- Excluding benefit scores for the top ranked criteria i.e. remove scores for criteria B & C
- Altering the scores of the criteria with the greatest scoring range so that all options score the same mid- range value i.e. replace criteria C scores with a '3' for all options

In doing so, the following results were produced:

Non- Financial Sensitivity Analysis

	option	Equal Weight		Remove B&C Scores		Alter C to '3'		
		weighted score	ranking	weighted score	ranking	weighted score	ranking	
1	Status Quo	260	3	140	2	290	2	
2	Monklands	400	1	150	1	360	1	
3	Forth Valley	320	2	140	2	290	2	

The Sensitivity Analysis shows therefore that despite changing the weights and scores, the Monklands option remains ranked first at all times.

Appendix 12

Financial Movement

FBC Financial Update

Increase in Capital costs from OBC

The table below shows the differences from OBC. The main differences are the inclusion of the link corridor, an increase in the area of the building & other mechanical & electrical additions which were unforeseen at OBC stage.

Description	Value
The introduction of the link corridor (133sq m) and the level change between the proposed facility and the existing adjacent floor levels in the hospital has necessitated the introduction of a bed lift, together with the cost of the corridor and link into existing building. This was excluded at the OBC stage.	£ 211,346
Increase in GIFA from OBC: This change has taken place as the lobby, atrium area, first floor balcony and other circulation areas have increased to those scheduled at OBC. 2721 m ² v 3084 m ² in FBC; Excludes Link corridor costs taken elsewhere; Rate taken as £4,100/m ²	£ 943,000
Energy Targets – the lack of renewables/limited opportunities has led to the requirement for a predominantly natural ventilation strategy. In order to comply with Building Regulations and meet minimum BREEAM Ene01 credits this has introduced a LED lighting scheme throughout which has introduced significant costs.	£ 140,246
Increased Generator capacity/Additional sub mains cabling required due to building shape.	£ 113,275
Stand alone Emergency Lighting; not required on previous schemes, NHSL preference in new build projects identified through design development\preferences.	£ 21,576
Additional Electrical Panel\board; Additional panel board required to enable beneficial occupation for LinAc installer. Additional mains cable; Level of redundancy required for building.	£ 56,098
UV filter & water treatment	£ 19,419
Fire Damper strategy; Previous projects derogated from HTM re 30 min protection; This facility does not.	£ 16,182
Timber ceiling to bunkers; Not envisaged at OBC stage	£ 22,939
Feature ceiling to entrance area; Not envisaged at OBC stage	£ 18,016
Increase in programme; estimated to be 62 weeks at cost planning stage; 66 weeks allowed for within draft target price	£ 89,056
Total (Excl VAT)	£1,651,153

Difference in Fee Amounts

At the OBC the amount for professional fees (£1,728,457) was expressed as a percentage (19.5%) of the construction costs. As we have gone through stage 3 we have obtained quotes for this works and the fees have reduced to £1,604,904.

Risk Register/ Client Risk

The amount of risk within the overall FBC figure has reduced by £603,252 from the £1,324,187 included at OBC Stage to £720,935.

This is largely due to the design development and allowances made within the OBC financial information being realised and replaced with market tested rates and fully developed design information.

The risk is broken down as follows: The total value of risk is £720,935, this includes a commercial view £390,935 of construction cost that the PSCP has proposed. This risk will sit within the target price for the project with gain share paid out in line with the contract.

We have run the priced PSCP risk register through the Monte Carlo simulation which has resulted in figures approximately 10% higher than that proposed by the PSCP.

The remaining £330,000 consists of £230,000 to cover any legal challenge to the procurement, £100,000 for unforeseen equipment and remainder is an allowance for client risk in the construction.