



West of Scotland Regional Planning Group

Satellite Radiotherapy Facility

Outline Business Case

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Glossary of Terms

West of Scotland Satellite Radiotherapy Facility

| | |
|----------|---|
| #'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 |
| FBC | Full Business Case |
| GJNH | Golden Jubilee National Hospital |
| GRO | General Registry Office |
| 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 |
| NHSQIS | NHS Quality 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 |
| PPE | Post Project Evaluation |
| PSC | Professional Services Contract |
| PSCP | Principal Supply Chain Partner |
| QA | Quality Assurance |
| SABR | Stereotactic Ablative Radiotherapy |
| SCIM | Scottish Capital Investment Manual |
| SGHD | Scottish Government Health Directorates |
| SPECT | Single Positron Emission Computed Tomography |
| SRAG | Scottish Radiotherapy Advisory Group |
| VMAT | Volumetric Modulated Arc Therapy |
| VoIP | Voice over Internet Protocol |
| WAN | Wider Area Network |
| WoSCAN | West of Scotland Cancer Service |
| WoSRPG | West of Scotland Regional Planning Group |
| WTE | Whole Time Equivalent |

1 Executive Summary

1.1 Introduction

This Outline Business Case (OBC) 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 OBC 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 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 has been undertaken.

Following a non-financial benefits appraisal workshop and further financial appraisal, a preferred option to meet service objectives has been identified. This full process is set out in detail within the OBC.

The preferred option for the Satellite Radiotherapy Facility has been identified as the former Airdrie Health Centre site within the grounds of Monklands Hospital.

Sensitivity testing has 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 OBC 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

| <u>Capital Costs</u> | <u>Monklands District</u> |
|--|---------------------------|
| | <u>General Hospital</u> |
| Building capital cost | £8,335,247 |
| Externals, Piling, Services, Landscaping costs | £678,635 |
| Non Works Costs | £60,000 |
| Fees | £1,728,457 |
| Equipment | £5,750,000 |
| Quantified Risk Allowance | £1,324,187 |
| | £17,876,526 |
| VAT | 20% |
| | £3,575,305 |
| | £21,451,831 |

Total recurring annual revenue costs of £4.2m are to be funded by West of Scotland Boards in line with existing agreed proportions. Further examination of the efficiencies and opportunities for revenue release will be undertaken in the development of the Full Business Case (FBC).

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 OBC will ensure that the project can move forward towards the development of the FBC 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 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.
- 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 likely to be extended as 'paperlite' or paperless systems are implemented to support the Satellite Facility and the demand for a continuously available system increases further, with critical network links between the two sites being put in place.

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 OBC.

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 Care 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 has been established to oversee the development of the Outline Business Case for this new facility for West of Scotland Boards.

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 proposed development. 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 a strategy of moving to paperless and 'paperlite' systems. 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 considered and 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/ 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.

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 paperless 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 provide support to nursing too.

A further 2.00 WTE Oncology Clinical Nurse Specialists (CNS) will also be required to provide a resource of 0.5 WTE CNS per clinical site. Patients' access to the CNS will be limited due to the part-time nature of roles.

Table 02: Nursing WTE

| | WTE per Band | | |
|--------------------------------------|--------------|-------------|-------------|
| | Band 5 | Band 6 | Total |
| 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 20.50 WTE included in the model. This will potentially put the Radiography service at the Satellite unit under pressure during periods of high levels of unpredictable absence e.g. sickness, special, carers and maternity leave and care 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 7 management posts will cover all routine aspects of management within the centre, e.g. staff rotation, staff training & CPD, absence management & other HR issues. Professional management support will be provided by senior Radiography staff from the BWoSCC.

In addition, it is proposed that 3.0 WTE staff would be required for the Mould Room (Mould room staff are currently Health Care Scientists but the potential for Radiographers to take on this role is currently being considered within the BWoSCC. This has the potential to reduce the mould room workforce for the two linear accelerator model by 1 WTE band 5.)

Table 04: Radiography WTE

| | | WTE per Band | | | | |
|--------------------------|------------------------|--------------|-------------|-------------|-------------|--------------|
| | | Band 3 | Band 5 | Band 6 | Band 7 | Total |
| Core | Management | | | | 1.00 | 1.00 |
| | LinAcs | | 4.00 | 2.00 | 2.00 | 8.00 |
| | CT Simulator | | 2.00 | 1.00 | 1.00 | 4.00 |
| | Pre treatment | | 1.00 | 1.00 | 1.00 | 3.00 |
| | Radiography Assistants | 2.00 | | | | 2.00 |
| | Cover | 0.50 | 1.00 | 1.00 | | 2.50 |
| Total Core | | 2.50 | 8.00 | 5.00 | 5.00 | 20.50 |
| Other | Breast Planning | | | 2.00 | | 2.00 |
| | Reviews | | | 1.00 | | 1.00 |
| Total Other | | | | 3.00 | | 3.00 |
| Total Radiography | | 2.5 | 8.00 | 8.00 | 5.00 | 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 75% of radical plans being 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 paperless 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 at 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, maintenance, laundry, infection control, catering, health & safety, fire, procurement, waste disposal, telecoms, IT
- 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 | | | | | Band 7 | WTE per Band | | | | |
|------------------|--------------|-------------|-------------|--------------|--------------|-------------|--------------|-------------|-------------|-------------|--------------|
| | Band 2 | Band 3 | Band 4 | Band 5 | Band 6 | | 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* |
| Health Physics | | | | | | | 0.50 | | | | 0.50 |
| Medical | | | | | | | | | 2.00 | 2.00 | 4.00 |
| Medical Physics | | | | 3.00 | 2.00 | 4.00 | 2.00 | 1.00 | 1.00 | | 13.00 |
| Nursing | | | | 1.50 | 3.00 | | | | | | 4.50 |
| Radiography | | 2.50 | | 8.00 | 8.00 | 5.00 | | | | | 23.50 |
| Total | 2.50 | 2.50 | 1.00 | 13.50 | 15.00 | 9.00 | 2.50 | 1.00 | 1.00 | 2.00 | 2.00 |
| | | | | | | | | | | | 52.00 |

Costings are based on 2013/14 prices and costed at midpoint +1

*potential reduction by 1 WTE see section 5

2.4.2.10 Workforce Costing

The costing for the proposed total workforce is as follows:

Table 09: Total Workforce Costing

| | WTE per Band | | | | | | | | | | | |
|------------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|-----------------|-----------------|-------------------|
| | Band 2 | Band 3 | Band 4 | Band 5 | Band 6 | Band 7 | Band 8a | Band 8b | Band 8c | Staff Grade | Consultants | Total |
| Admin | 48,400 | | 25,400 | | | | | | | | | 73,800 |
| Mould Room Staff | | | | 31,000 | 74,400 | | | | | | | 105,400 |
| Health Physics | | | | | | | 27,920 | | | | | 27.920 |
| Medical | | | | | | | | | | 116,600 | 270,600 | 387,200 |
| Medical Physics | | | | 93,100 | 74,400 | 178,100 | 111,680 | 67,700 | 81,500 | | | 606,480 |
| Nursing | | | | 46,600 | 111,600 | | | | | | | 158,200 |
| Radiography | | 54,600 | | 248,300 | 297,700 | 222,700 | | | | | | 823,300 |
| Total | £48,400 | £54,600 | £25,400 | £419,000 | £558,100 | £400,800 | £139,600 | £67,700 | £81,500 | £116,600 | £270,600 | £2,182,300 |

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 to radiotherapy services for people from deprived areas | More hard to reach patients using the centre Uplift in patient satisfaction Reduction in DNA rates | Survey of staff and patients regarding how accessible they find the facility Compare DNA rates with current rates | 1 year from opening |
| 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 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 |

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.

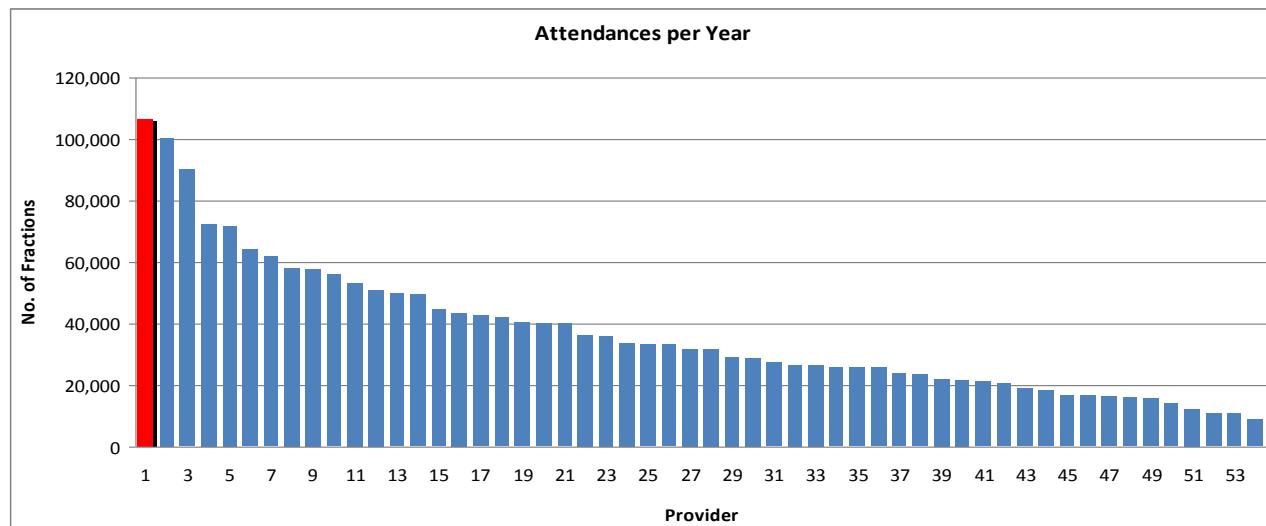
Current provision for Linear Accelerators is as follows across Scotland:

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 2011/12 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 2011/12



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 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.

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.

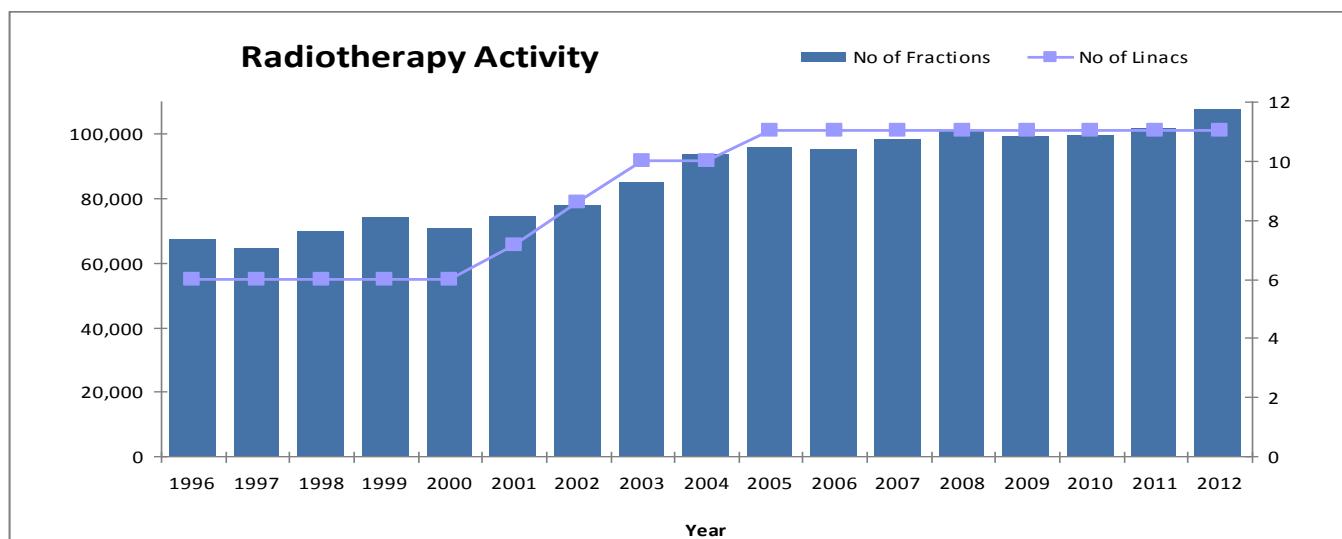
Discussions have taken place through the National Radiotherapy Programme Board regarding capacity issues and the Board accepts that there is a need for a strategic solution based on the Pathways and Processes work. This national group has agreed with the assumption that a satellite facility for the West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

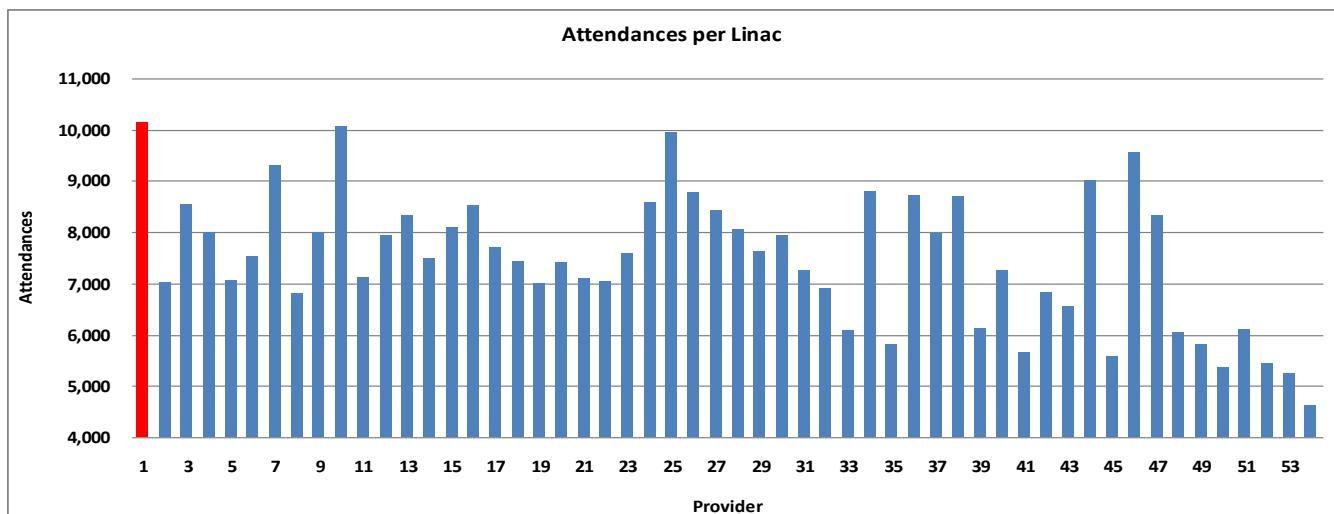
Radiotherapy activity levels have risen consistently over the last 15 years at the BWoSCC, in line with the additional capacity made available through the increase in the installed base of linear accelerators.

Diagram 07: Beatson Radiotherapy Activity



Comparison with other departments confirms that the accelerator workloads at the BWoSCC are operating around 33% higher than the UK average. Accelerator utilisation rates are typically above 90%. The average across the UK is 7,333 fractions per accelerator as reported by the national Radiotherapy Dataset. 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 | 2011 | | | | 2012 | | | |
|------------------------|-----------|------------|----------|------------|-----------|------------|----------|------------|
| | Fractions | | Patients | | Fractions | | Patients | |
| | Radical | Palliative | Radical | Palliative | Radical | Palliative | Radical | Palliative |
| Total | 101,934 | | 6,284 | | 107,006 | | 6,531 | |
| | 89,565 | 12,369 | 4,013 | 2,271 | 94,836 | 12,170 | 4,281 | 2,250 |
| 4 Tumour Groups | 62,650 | 7,485 | 2,807 | 1,329 | 64,246 | 7,911 | 2,951 | 1,489 |
| - Breast | 32,179 | 1,307 | 1,671 | 257 | 31,184 | 1,401 | 1,696 | 298 |
| - Prostate | 17,745 | 764 | 545 | 197 | 20,414 | 969 | 648 | 255 |
| - Lung | 7,673 | 5,061 | 365 | 812 | 8,329 | 5,086 | 419 | 848 |
| - Rectal | 4,963 | 350 | 226 | 63 | 4,319 | 455 | 188 | 88 |

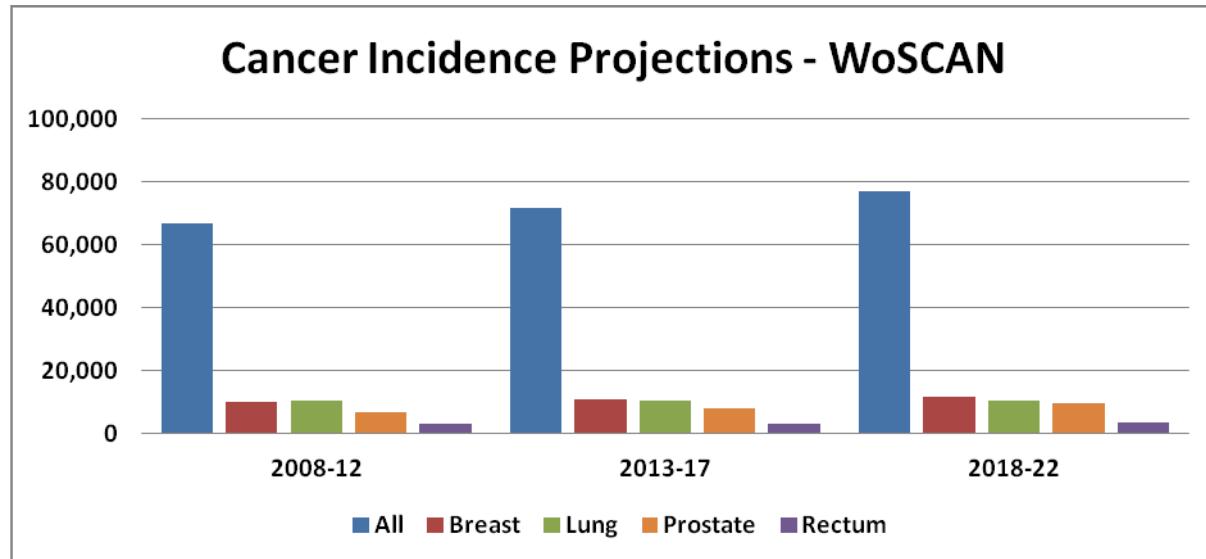
The clinical case mix that would be treated within the satellite radiotherapy facility has been identified as the following cancer sites:

- 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 One 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.

Two potential sites identified for the proposed Satellite Facility:

- NHS Lanarkshire: Monklands General Hospital
- NHS Forth Valley: Forth Valley Royal Hospital

Using projected cancer incidence data and patient flow mapping techniques, an assessment as to how many patients could be treated within a 30 minute travel time radius of the two potential locations was made. Other travel time boundaries considered were 20, 40, 60 and 90 minutes however it was demonstrated through modelling that a 30 minute boundary provided the better fit from a capacity planning perspective.

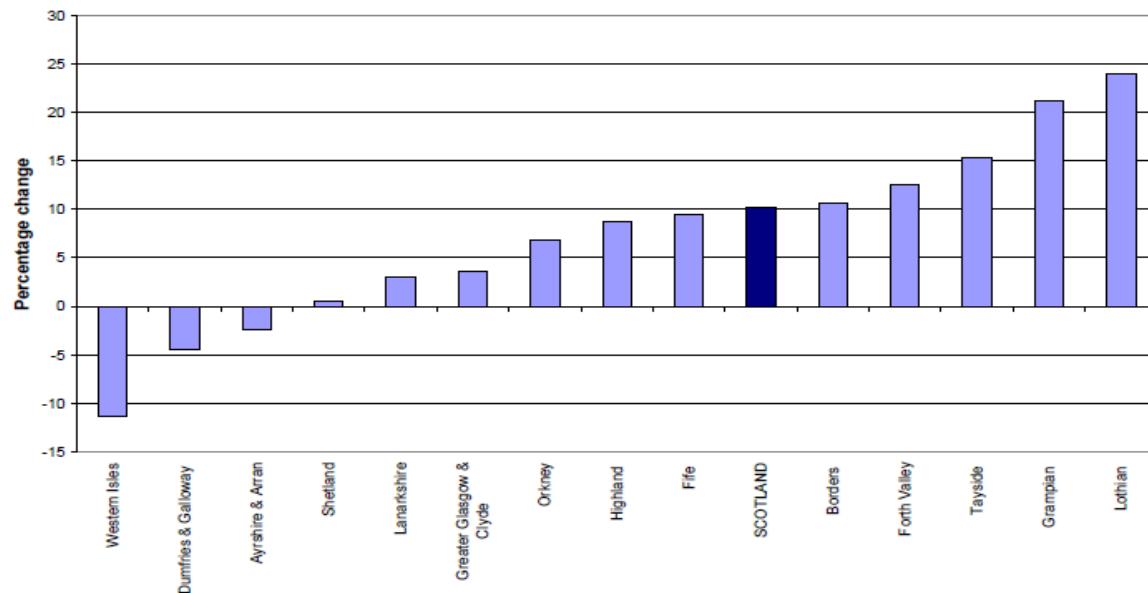
The impact of a 40 minute travel time on Forth Valley Royal was modelled and did generate more activity but raised issues of acceptability as much of this patient flow was from North and west Glasgow from patients who were living close to the existing cancer centre at the Beatson. It was not considered appropriate that patients outwith the Forth Valley health board region should transfer from the existing centres at the BWoSCC and Edinburgh Cancer Centre to a new site at Forth Valley. It was considered that asking patients who are already living next to an existing cancer centre to travel for more than 30 minutes to a different centre would be difficult. The 30 minute modelling showed Monklands was able to deliver radiotherapy to the largest number of patients travelling within 30 minutes followed by Forth Valley Royal.

Work was then undertaken to model the impact on the existing cancer centres of the additional satellite facility capacity should it open in 2017. From the established 30 minute travel time catchment Forth Valley Royal Hospital was able to provide 1.18 LinAcs worth of

activity that would otherwise have gone to the BWoSCC plus an additional 0.38 LinAcs worth of activity from Edinburgh. The same figures for Monklands were 2.4 and 0.1 respectively. This demonstrates that there is a greater positive impact on the current pressures experienced by the BWoSCC in selecting the Monklands site.

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 Desired 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.

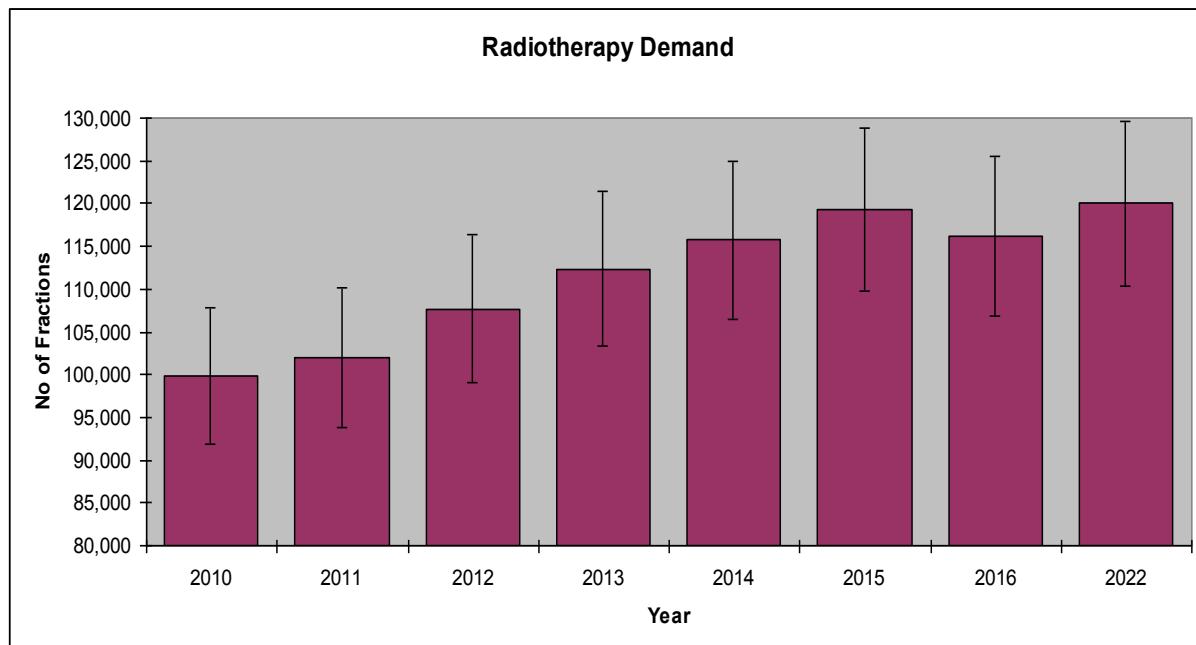
This would create a capacity to deliver over 113,000 fractions per annum, with 95,000 fractions at the BWoSCC and 18,000 at the satellite. The breakdown by tumour group is detailed below:

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.

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 OBC.

2.9 Benefits Criteria

This section describes the criteria established as being optimal to support a satellite radiotherapy facility and the core elements within each:

Table 14: Benefits Criteria

| Benefit | Definition | Core Elements |
|-------------------------|--|---|
| Clinical Benefit | Having access to the full range of acute services required to support patients attending a satellite radiotherapy facility. | <ul style="list-style-type: none"> Access to high quality 'state of the art' radiotherapy services 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. |
| 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 able to travel to the satellite facility quicker than to the Beatson Improvement in access to RT for the specified incident population Availability of car parking facilities Alternative public transport availability e.g. bus and rail |
| 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 |
| 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 |
| 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 |

A full Benefits Realisation Plan will be developed through the delivery of the FBC.

2.10 Strategic Risks

The main Project Risks and mitigation factors have been identified at a high level at IA stage. At this Outline Business Case (OBC) stage a more detailed and quantified risk register has been prepared. This will be further refined at Full Business Case (FBC) stage.

The Strategic Risks at IA 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 | Encompass current legislation and adherence to strategies and key programmes. Early engagement with Scottish Government and West of Scotland Health Boards colleagues. |
| | 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 SGHD 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 |

This OBC details the development of risks into a formal risk register capturing individual risks within each 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 Quality Improvement Standards (NHSQIS).

Following the IA approval, an initial project risk register was established at a Project Team Risk Workshop held on 08th May 2013. This Workshop was run by the PSC PM and was attended by a wide audience comprising workgroup representatives from Clinical and Patient Groups, PSCP, NHS GG&C and NDSL, which fed Risks from each sub group into the Master Register. A full list of attendees can be seen in Appendix Six.

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

Table 16: QIS 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 | - | - |
| High | 6 | 4 |
| Medium | 21 | 14 |
| Low | 2 | 11 |

Further details on the approach to Risk Management moving forward towards FBC are documented within Section 3.8 Risk Assessment and Section 6.6 Risk Management.

2.11 Constraints and Dependencies

There are a number of constraints and dependencies associated with the project. The primary constraints in projects of this type are generally the availability of suitable land and Scottish Government approval to fund the project. The project would be unable to proceed if either of these could not be achieved.

The sites under consideration are held within existing hospital boundaries and therefore the securing of suitable land should not be regarded as a risk or a constraint.

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

- Requirement for adjacent hospital services i.e. Chemo, ITU, MRI, Acute Services
- Requirement to provide similar clinical functions and models as the Beatson
- Network Link to the Beatson
- Staffing rotation and recruitment
- Paperless 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 OBC documents the process and provides evidence to show that the selection of the preferred option is derived from the most economically advantageous option whilst best meeting the service needs and optimising value for money.

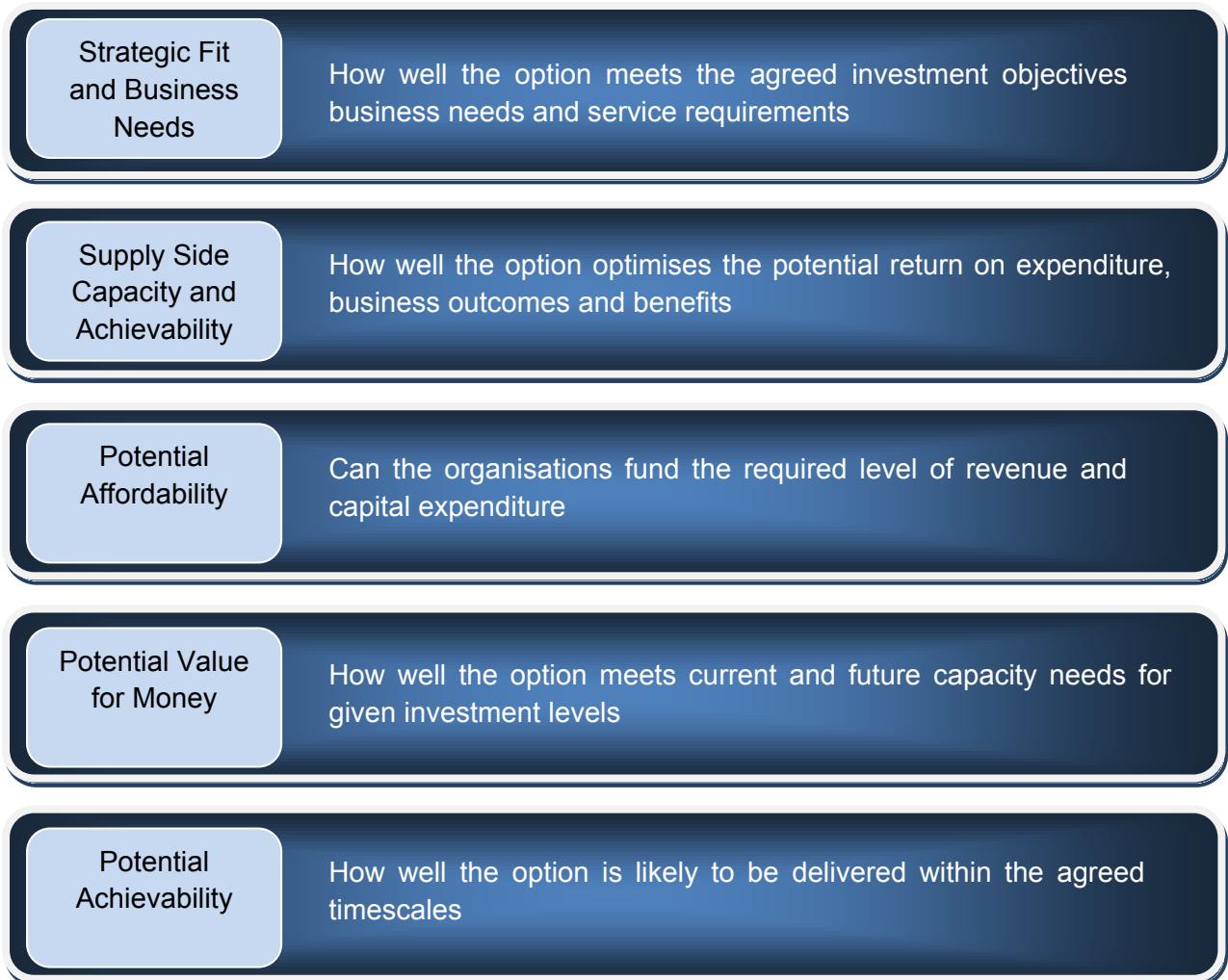
The Economic Case sets out:

- 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

In preparing the IA all appropriate funding and procurement options were considered including NPD. However, 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 that national capital as opposed to local would be the most appropriate funding vehicle to be explored for the OBC stage.

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.

Post this work, the IA identified the following as making up the Short List to be 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.

The forecast capital costs for these sites have been further refined and developed and are summarised in the Table below. The OB Forms are contained in Appendix Three.

Table 19: Forecast 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 |
| | £21,451,831 | £21,724,716 |

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

Table 20: 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 | £532 | £9,280 | £11,640 | £21,452 |
| Forth Valley Royal Hospital | £539 | £9,398 | £11,788 | £21,725 |

3.6.2 Revenue Costs

The high level indicative revenue costs for running the facility noted within the Initial Agreement were forecast to fall within the range £3.4m to £3.6m. Further work undertaken to develop the scheme to OBC stage has resulted in the following revised 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 | £2,182,300.00 | £2,182,300.00 |
| <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 | £1,994,000.00 | £1,969,722.00 |
| TOTAL PAY & NON PAY COSTS | £4,176,300.00 | £4,152,022.00 |

The main reason for the increased costs relates to the higher number of staff, chiefly Radiography staff, which has been identified as being required for the facility. Further details on the workforce planning assumptions are contained within Section 2.4 of this OBC.

3.6.3 Lifecycle Costs

Indicative Lifecycle costs for the new facility have been 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 are 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 full list of attendees is attached as Appendix Four.

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

The 3 Options to be appraised were:

Diagram 15: Short List of Options

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

3.7.1 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.

3.7.2 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 of this OBC, however a summary is provided below:

Table 23: 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:

Table 24: 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 | |

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:

Table 25: Benefits Weighting

| A | B | C | D | E |
|----|----|----|----|----|
| 10 | 30 | 30 | 10 | 20 |

3.7.3 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:

Table 26: 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:

3.7.4 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.

3.7.5 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.

3.7.6 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.

3.7.7 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.

3.7.8 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.

3.7.9 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:

Table 29: 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.

3.8 Risk Assessment

A full risk analysis was undertaken to identify and assess the impact of risks during the stages of the project. Following IA approval, an initial project risk register was established at a Risk Workshop held on 08th May 2013.

The Register will continue to be updated and reviewed throughout the course of the project. The various workgroups will feed pertinent Risks in to the Master Register on a regular basis and Board Risk will also be captured and mitigated. An update on the very high risks will be discussed at the Core Group Meetings and the Project Board will be kept informed of the highest scoring risks via their Project Board Meeting.

Further details of the approach to Risk Management moving towards Full Business Case are documented within Section 2.10 and Section 6.6 of this OBC.

3.9 Preferred Option

The preferred option in terms of non-financial benefits appraisal is the Monklands site as can be seen from the table below.

Table 30: 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 continues to rank consistently highest of the three options under each scenario.

Table 31: 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 has been 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 32: 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

As a Business Case is built upon various estimates, it is recommended that a sensitivity analysis is 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 demonstrate the following:

3.10.1 Sensitivity Analysis in respect of Net Present Cost

Section 3.6.4 identifies that both options have 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 shows 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

Section 3.10 identifies that Monklands District General Hospital has the lowest Net Present Cost per Benefit Point. As a result of the outcome of the non-financial appraisal, sensitivity analysis demonstrates that substantial movements would require to occur 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.

Due to the fact that the nature of the development means that the majority of all costs forming part of the key estimates are 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 results of both the non-financial and financial appraisals, and confirmed through subsequent sensitivity analysis, have determined that the preferred option is to site the proposed Satellite Radiotherapy Facility at Monklands District General Hospital.

4 The Commercial Case

4.1 Introduction

This section of the OBC 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 Potential 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 current thinking on the various cost elements of the proposed Satellite Facility.

Table 33: Clinical services

| | |
|--|--|
| Medical staffing | NHS GG&C employer. Included in workforce plan. |
| Radiography staffing | NHS GG&C employer. Included in workforce plan. |
| Nurse staffing | NHS GG&C employer. Included in workforce plan. |
| Physics staffing | NHS GG&C employer. Included in workforce plan. |
| Linear accelerator procurement, commissioning and maintenance | NHS GG&C Included in capital and revenue costing. |

| | |
|--|--|
| CT procurement, commissioning and maintenance | NHSGG&C 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 34: 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 | N/A to these tumour types |
| 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 35: 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 36: 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 through NHSGG&C

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

4.3 Potential 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 37: Risk Allocation

| Risk Category | Potential 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 Potential 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 Potential 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 SGHD'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:

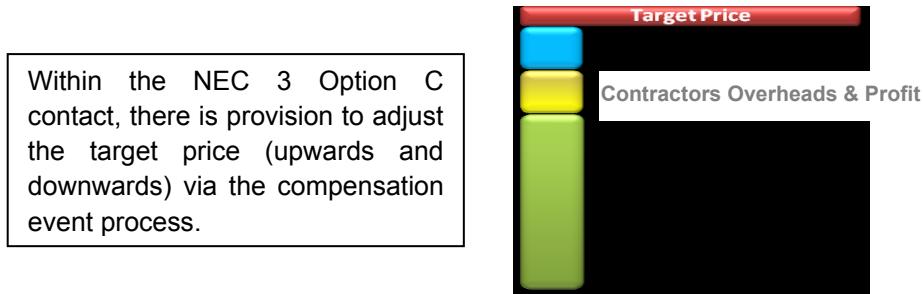
4.5.1 Open Book Philosophy

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

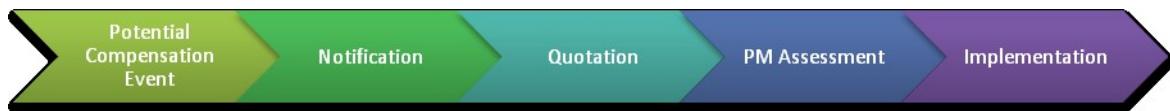
Clause 60.1 details 19 compensation events for which the PSCP is entitled to compensation if they occur. The object of the NEC 3 contract is to ensure that all compensation events are listed in one place, expressed clearly to avoid disagreement and to allocate the events in line with modern risk allocation 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 Potential 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 15 – 20 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 30 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 only 2 – 4 post graduate diploma

students qualifying each year. It is therefore clear that the Scottish HEIs are currently providing enough graduates to provide replacement staff for 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 is presenting it to the next Radiotherapy Programme Board. This paper suggests 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 student placements may also require to be identified to support this.

However, it should also be noted that staff numbers is not the only deficit likely to be experienced since the satellite will need at least 4 – 5 Band 7 and above staff, and with comparable posts being graded at one or even two grades above those offered at the BWoSCC even within other Scottish centres, this band is unlikely to attract large interest from external applicants. Therefore these promoted posts are likely to be filled from the existing staff of the BWoSCC and could 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 is proving a challenge in NHS Scotland in 2013. There are existing vacancies in all 5 Scottish cancer centres as of June 2013. The aim will be to recruit up to 3 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 rotating between sites

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

4.6.3 Site management arrangements will need to be confirmed

The workforce plan has been developed by individual staff groups and does not identify the overall management structure for the Satellite unit. This will require to be developed and agreed.

4.6.4 Changes to staff bases will need to be negotiated as appropriate

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 Potential Implementation Timescales

Following approval of the Outline Business Case, the Full Business Case (FBC) will be prepared and submitted to CIG for approval. An estimated 7 months has been programmed 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 38: Timescales

| Stage 2: OBC | Completion Date |
|-------------------------------------|------------------------|
| OBG Approved by Project Board | 08/07/2013 |
| OBG Submission to CIG | 09/07/2013 |
| OBG Approval by CIG | 13/08/2013 |
| Stage 3: FBC | |
| FBC Approved by Project Board | 03/03/2014 |
| FBC Submission to CIG | 04/03/2014 |
| FBC Approval by CIG | 08/04/2014 |
| Statutory Approvals | 06/10/2014 |
| Stage 4: Construction | |
| Start on Site | 09/05/2014 |
| Internal Fitout | 15/07/2015 |
| Full & Final Commissioning Complete | 14/08/2015 |
| Beneficial Access & LinAc Install | 02/06/2015 |
| Commence Clinical Services | 24/11/2015 |

4.8 Potential Accountancy Treatment

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

The Financial Case

5.1 Introduction

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

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

5.2 Potential Capital/ Funding Requirement

The potential 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 our Framework PSCP, Laing O'Rourke, in conjunction with our cost advisors, Currie & Brown. OB Forms are attached in Appendix Three.

5.2.1 Capital Costs

Capital equipment requirements have been prepared in conjunction with NHSGG&C's Radiotherapy Physics department and have been costed using the latest pricing information derived from the recent procurement of similar equipment.

Table 39: Forecast Capital Costs for the Preferred Option

| <u>Capital Costs</u> | <u>Monklands District</u> |
|--|---|
| | <u>General Hospital</u> |
| Building capital cost | £8,335,247 |
| Externals, Piling, Services, Landscaping costs | £678,635 |
| Non Works Costs | £60,000 |
| Fees | £1,728,457 |
| Equipment | £5,750,000 |
| Quantified Risk Allowance | £1,324,187 |
| | £17,876,526 |
| VAT | 20% £3,575,305 £21,451,831 |

The build costs represent the costs of construction in respect of a 3 bunker facility with 2 floors amounting to a total footprint of 2,721.9 m2.

The departments and areas are based on Schedule of Accommodation Revision 7 which is included as Appendix Five in this OBC.

The estimated construction costs have been prepared by our Framework PSCP partners in conjunction with our 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 Six. 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 at OBC stage. 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 within the Initial Agreement, 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 OBC 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 £21.452m 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, 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 exact split of such funding will be confirmed at Full Business Case stage however, the total projected capital spend profile for the full development is shown in the table below:

Table 40: Indicative Spend Profiles

| <u>Indicative Capital Spend Profile</u> | <u>2013/14</u> | <u>2014 /15</u> | <u>2015 /16</u> | <u>TOTALS</u> |
|---|----------------|-----------------|-----------------|---------------|
| | £'000 | £'000 | £'000 | £'000 |
| Monklands District General Hospital | £532 | £9,280 | £11,640 | £21,452 |

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.

Table 41: Total Revenue Costs

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

The high level indicative revenue costs for running the facility noted within the Initial Agreement were forecast to fall within the range £3.4m to £3.6m. The main reason for the increased costs relates to the higher number of staff and an increase in the calculated depreciation charge. Further commentary on the Revenue costs by category is included below.

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 are contained within Section 2.4.2. The forecast number of staff required to operate the facility has increased from the Initial Agreement stage and the main category of staff impacting on the increased levels relate to Radiography staff.

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 Initial Agreement stage a high level equipment provision, to be used to also fund Information & Technology requirements, was incorporated within the capital figures and depreciated over 10 years. Although this overall equipment value remains in line with that forecast within the Initial Agreement, as a result of the further work undertaken in respect of identifying specific IT requirements, it has been possible to calculate the depreciation on these items in a more realistic manner through identifying the value to be depreciated over a more standard 5 year life for IT equipment. This has been the driver for the slight increase in depreciation costs between the IA and the OBC.

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 SGHD 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 Seven.

5.4 Potential 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 OBC 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 SGHD through completion of the annual AME Impairment Return.

5.4.3 Initial Expenditure up to Stage 2 of the Project (OBC Stage)

Following approval of the Initial Agreement, and in order to progress the design and development of the facility to Stage 2 (OBC), it has been necessary to appoint a Principal Supply Chain Partner (PSCP) and Project Managers and Cost Advisors to progress the initial designs for the facility. Pending the approval of a preferred option, NHSGG&C has been the lead Board in progressing these aspects of the scheme and has therefore incurred some early capital costs associated with this work. As these costs are an integral part of the scheme, they have been included in the construction expenditure noted in this document. It will therefore be necessary for the funding for the associated elements of this work to flow to NHSGGC. To ensure that that all such development costs are correctly accounted for as part of the final asset value to be recognised by NHSL, the final value of these design and development costs will be transferred from NHSGGC to NHSL.

5.5 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 Seven. The work of the project core group to develop the OBC has been supported by a wide range staff and voluntary sector stakeholders.

5.6 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 £21.452m 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 £4.2m to be funded by West of Scotland Boards in line with existing agreed proportions;

6 Management Case

6.1 Introduction

This section of the OBC 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 finalise design, work up 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.

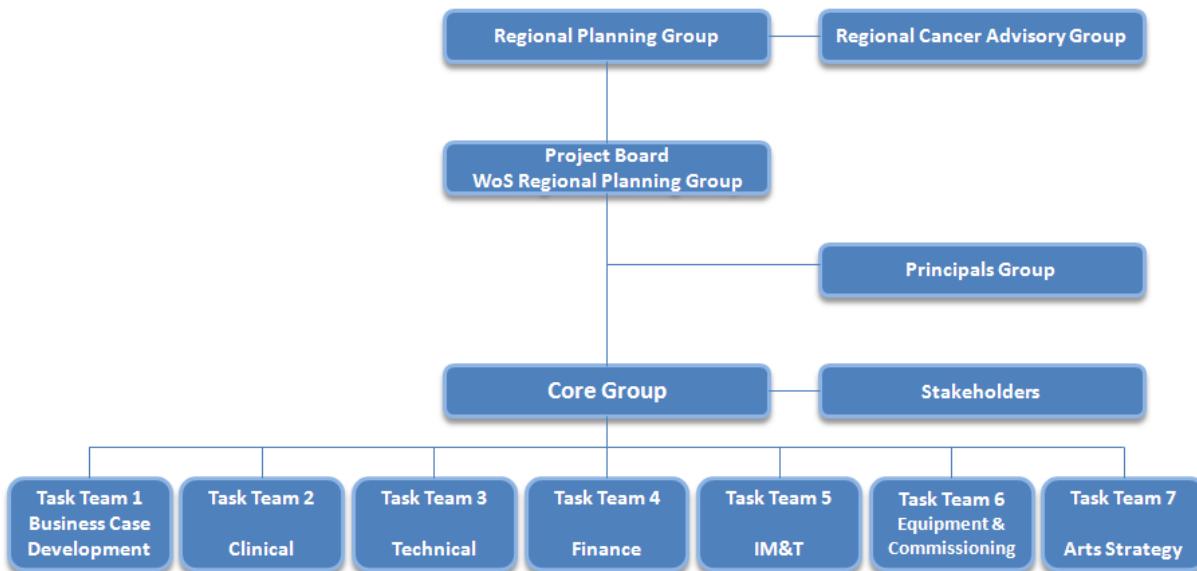
The Project Board will comprise representatives from NHS Forth Valley, NHS Greater Glasgow & Clyde, NHS Lanarkshire, Regional Planning, Staff Representatives and Patient and Staff side representatives. The Project Board will represent the wider ownership interests of the project and maintain co-ordination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

A Principals Group will meet Quarterly in order to focus on strategic issues, receive updates from the Core Group and make overall decisions about how to manage the relationships between project parties.

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 Nine:

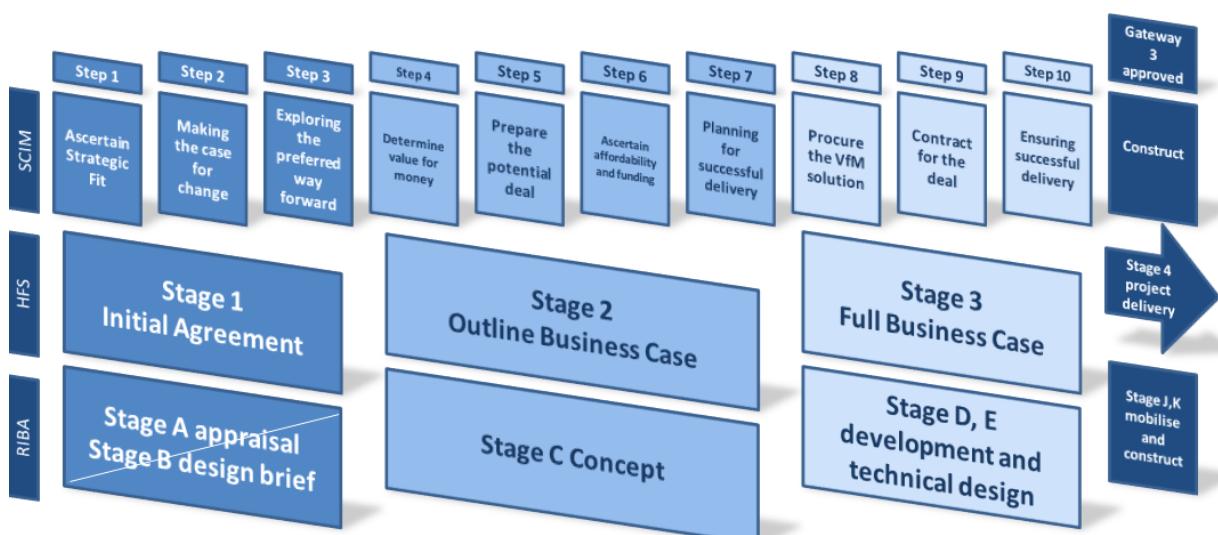
Diagram 21: Project Governance



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 SGHD CIG meeting on 19th December 2012

Table 42: 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 SGHD | 09 th July 2013 |
| SGHD CIG | 13 th August 2013 |
| Anticipated OBC Approval | 20 th August 2013 |

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

Table 43: Stage 3/ FBC Critical Milestones

| Milestone | Date |
|-------------------------------|--------------------------------|
| Complete Market Testing | 17 th January 2014 |
| Finalise Target Price | 17 th February 2014 |
| Project Board Approval of FBC | 03 rd March 2014 |
| Submission of FBC to SGHD | 04 th March 2014 |
| SGHD CIG | 08 th April 2014 |
| Anticipated FBC Approval | 15 th April 2014 |

Anticipated construction critical milestones (as per Laing O' Rourke initial construction programme) are as follows:

Table 44: Critical Milestones

| Milestone | Date |
|----------------------------------|--------------------------------|
| Submit Full Planning Application | 13 th December 2013 |
| Start on Site | 09 th May 2014 |
| Beneficial Access to Bunkers | 02 nd June 2015 |
| Project Completion | 14 th August 2015 |
| Clinical Services Commence | 24 th 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 throughout the OBC and FBC stages of development.

Diagram 23: Key Aims

- Raise awareness of proposals for the new radiotherapy facility and what services it would 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-groups.

6.3.5.4 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 OBC '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 OBC.

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

The Register will be routinely reviewed and updated over the lifespan of the project to minimise the level of risk.

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

The Risk Register will be 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 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.

Further detail of the resource implications associated with completing the detailed evaluation process will be incorporated in the FBC documentation.

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 this OBC. 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 One

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 | | | Range of Travel | | | Mean variance in travel time F v's M (mins) |
|-------------------------|-------------|-----|-----|-----------------|--------|--------|--|
| | Time (mins) | | | Time (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 utlises 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.

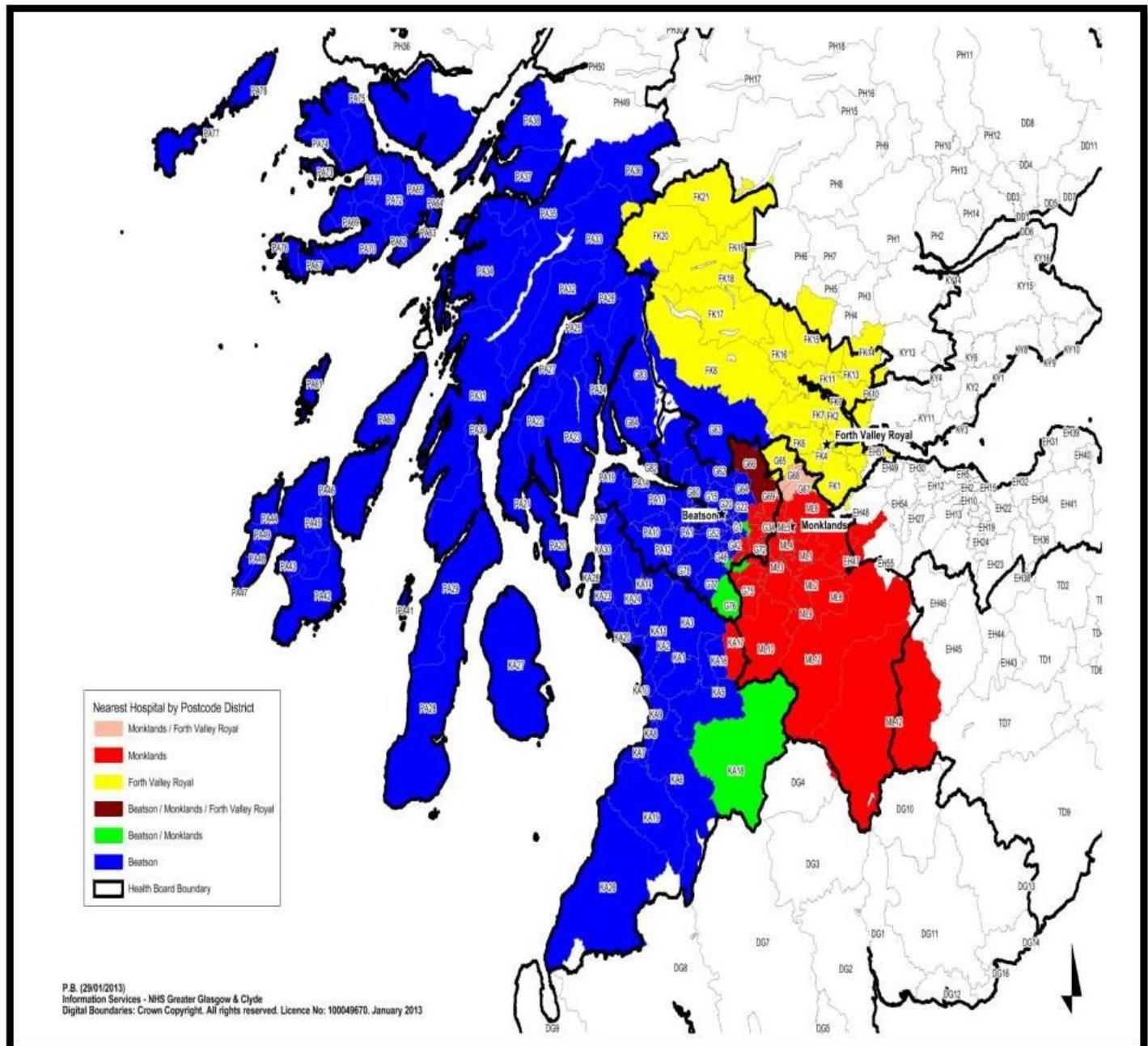
The Satellite Radiotherapy Facility Project Board are asked to note the content of this paper to assist them in identifying the preferred site to host the new facility.

Gordon McLean

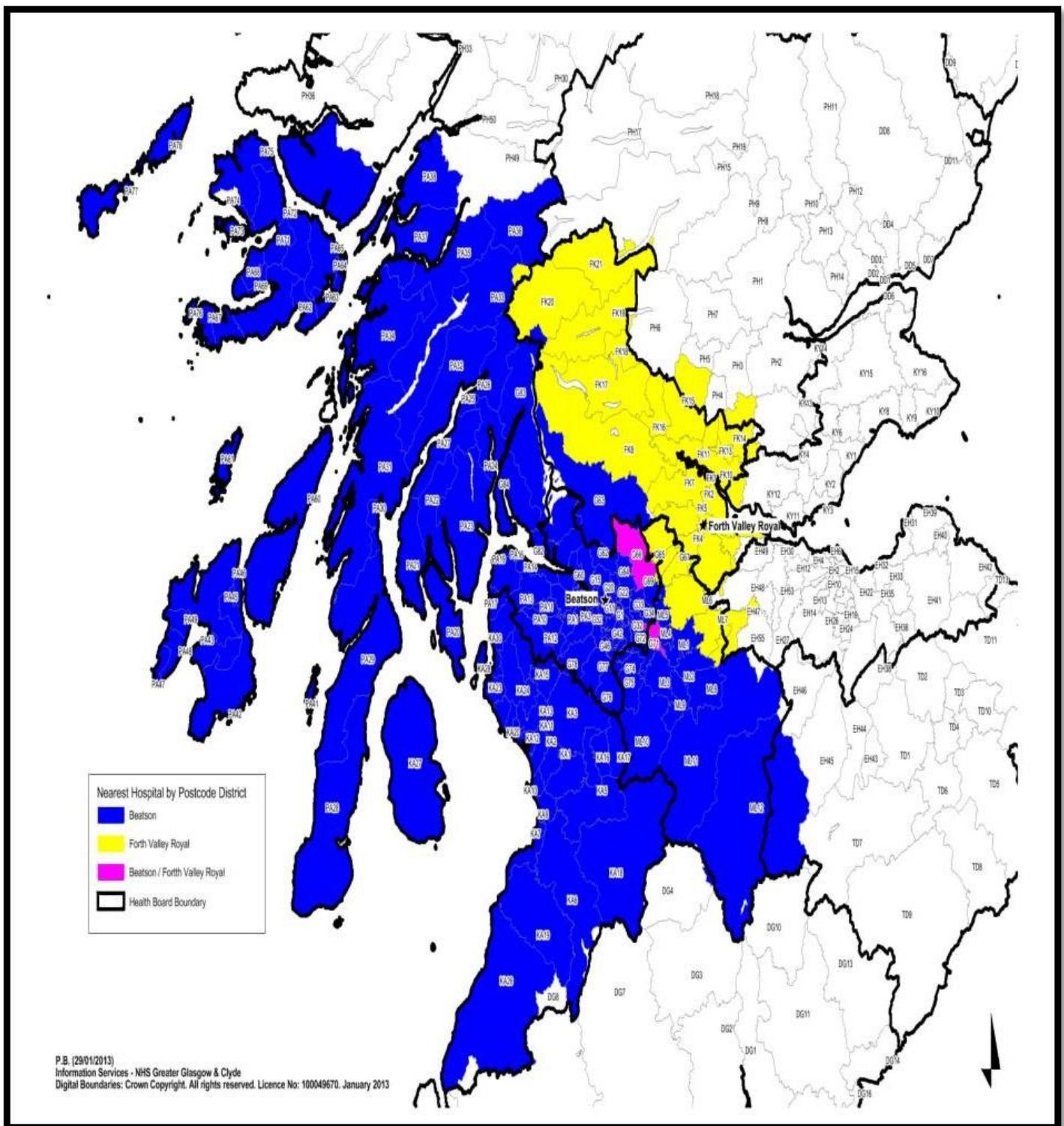
Thanks go to Paula Barton, David Morrison and Gwendolyn Allardice of NHS Greater Glasgow & Clyde for the provision of the information to support the production of this paper.

Appendix 1

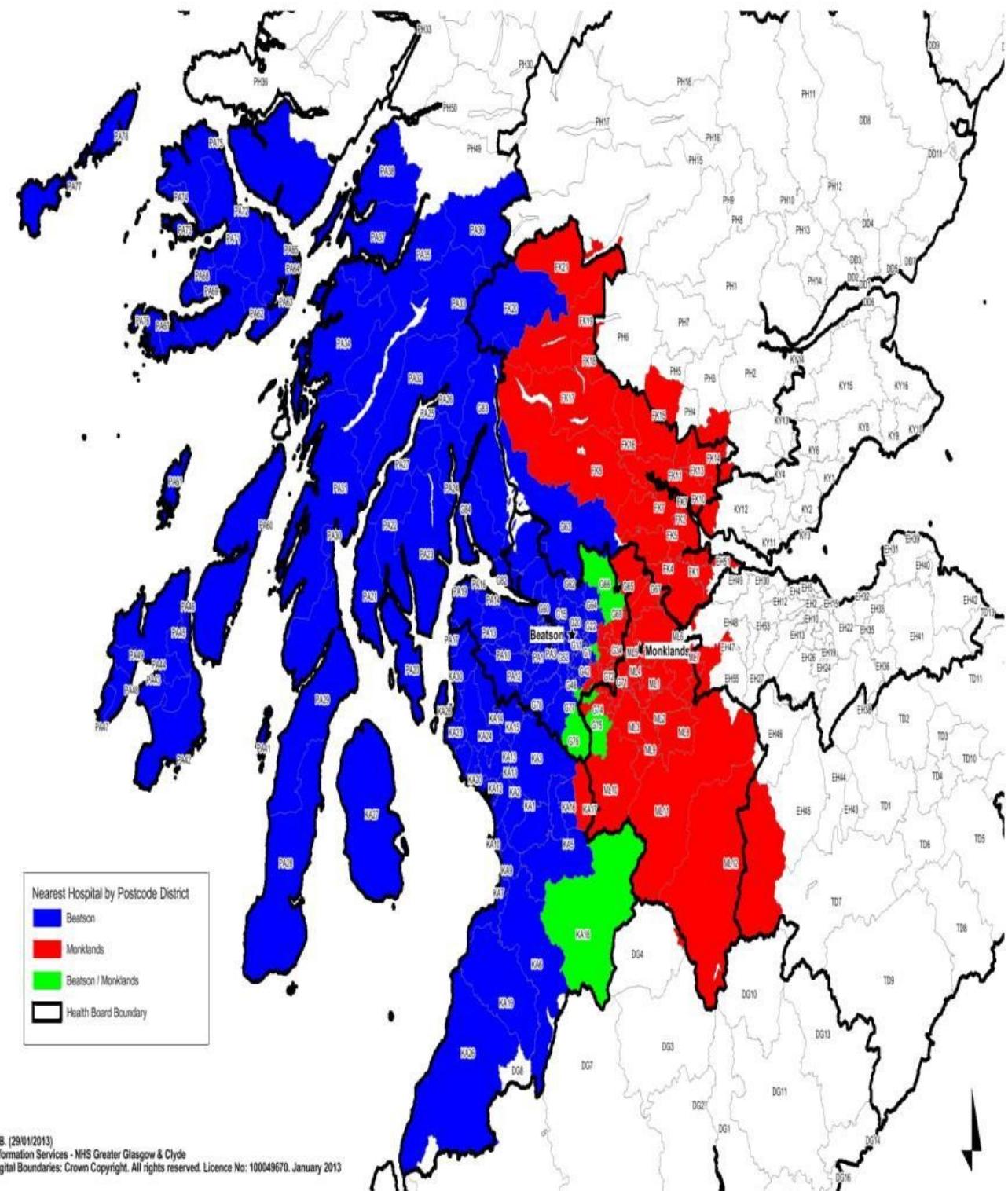
Nearest Site to the WoS Postcodes



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.

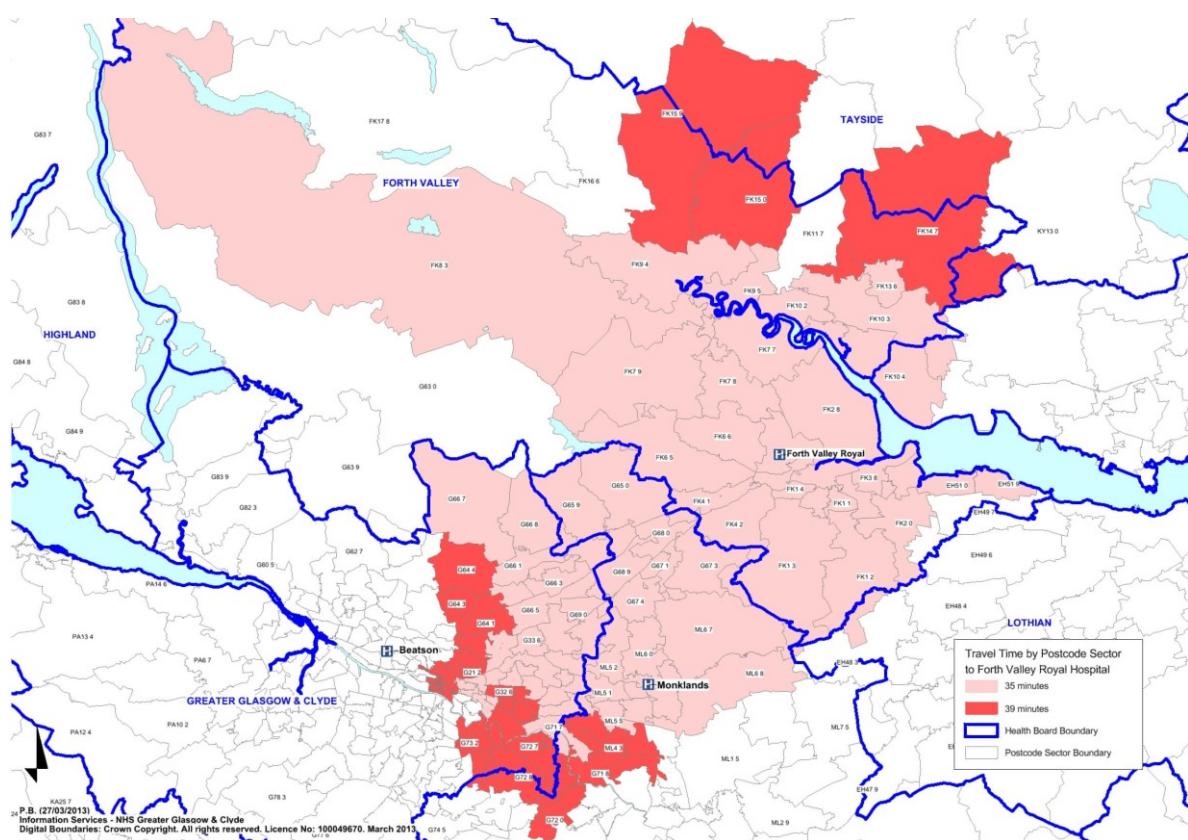
WoS Satellite Radiotherapy Travel time Boundaries – Additional Information

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

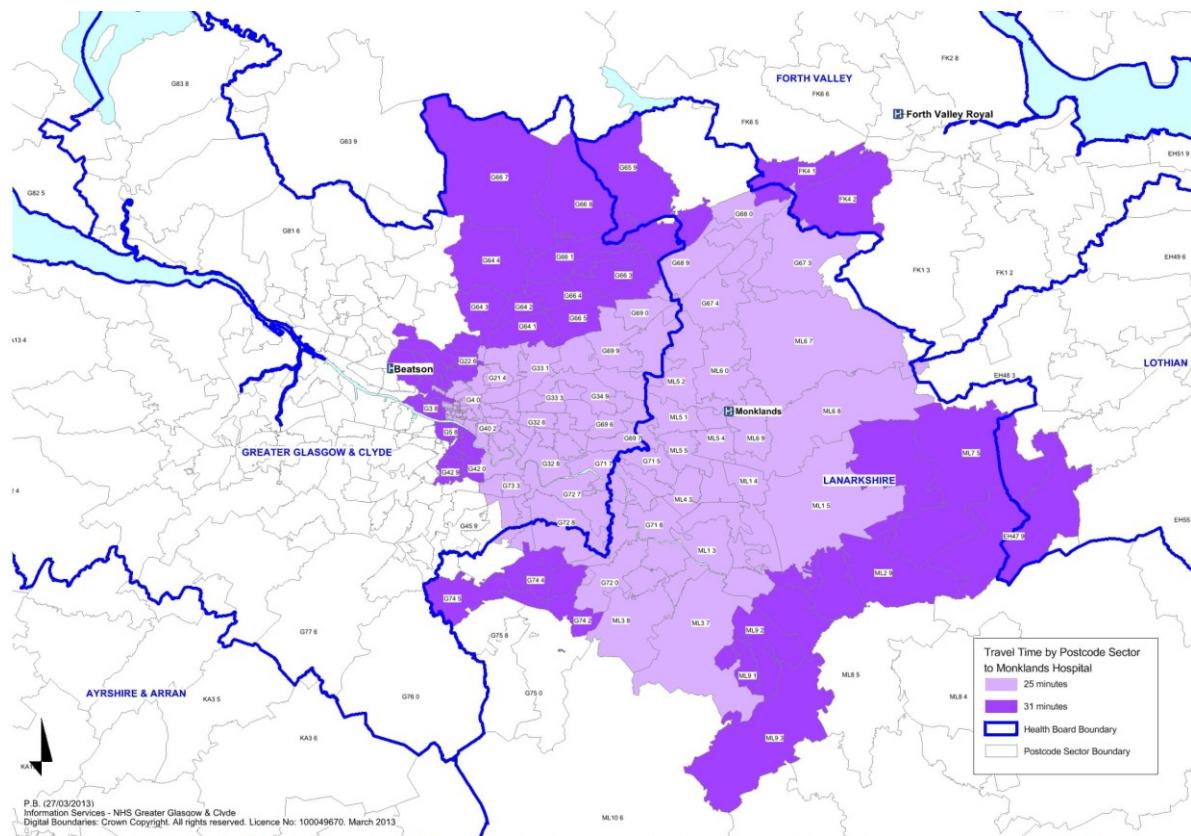
The following maps detail the car travel time boundaries surrounding each of the preferred sites, which would generate the required demand for a 2 and 3 LinAc facility. These maps are based purely on car travel times from consolidated West of Scotland postcodes and are not focussed on specific health 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.

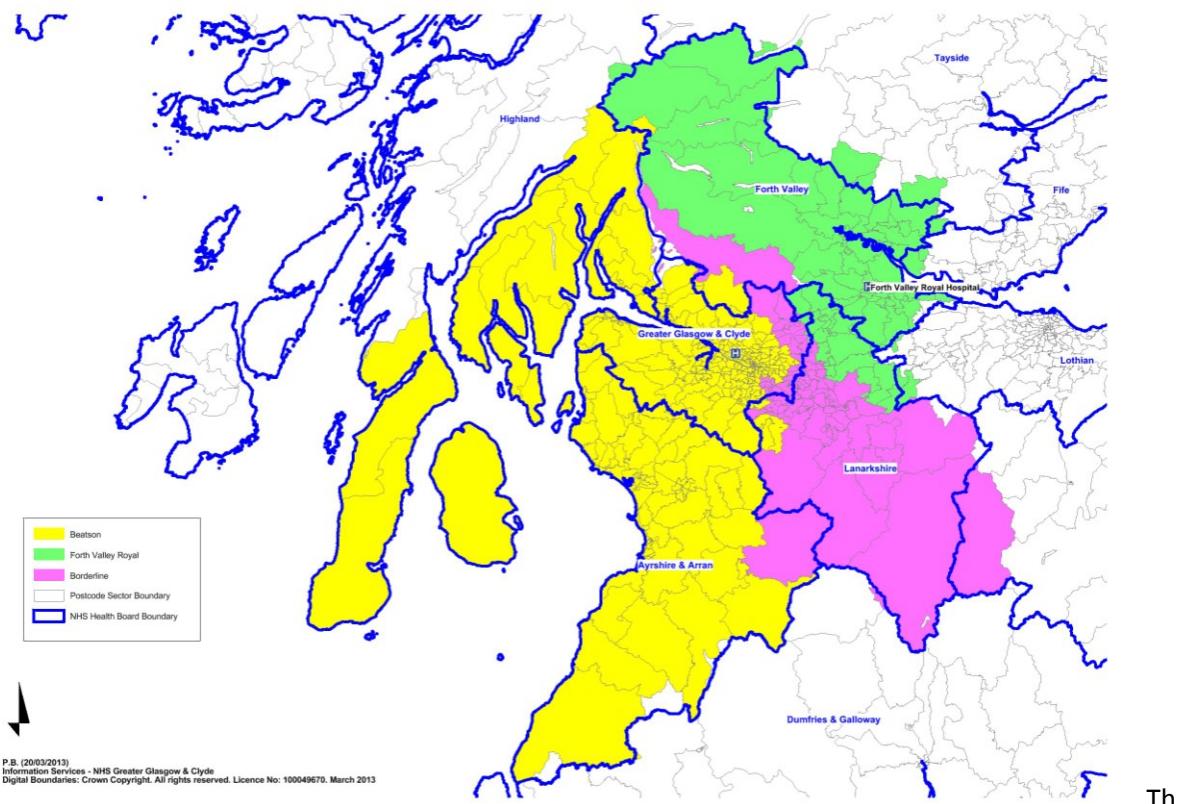
Finally it needs to be considered if this approach was to be applied to agree the catchment area for the satellite facility how feasible it would be to expect those patients living in closer proximity to the Beatson Cancer Centre to travel further to the satellite facility in order to generate the required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

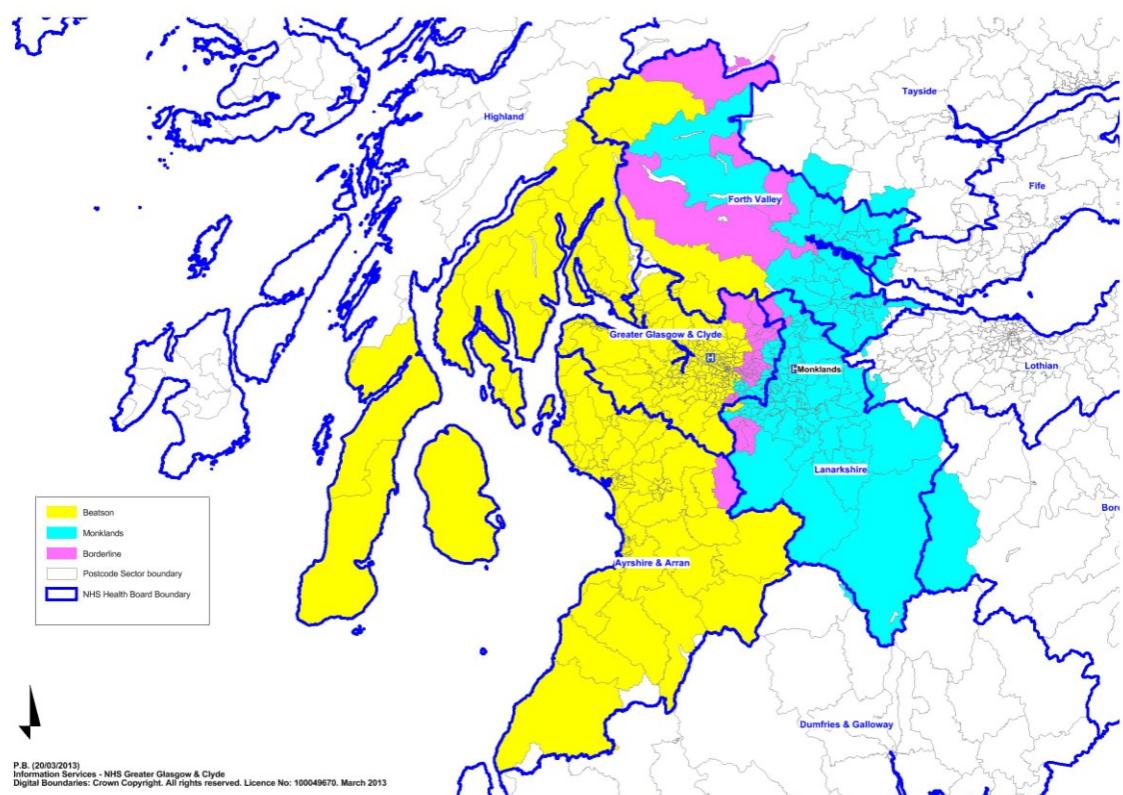
Forth Valley Royal Hospital



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 Two

Risk Workshop Attendees

West of Scotland Satellite Radiotherapy Facility: Risk Workshop

Attendance Register: Wednesday 08th May 2013, Currie & Brown Scotland Hub

| Name | Attendance | Role |
|-----------------|------------|------|
| Bob Brown | | N |
| Heather Knox | Y | |
| Tony Cocozza | Y | |
| Colin Lauder | Y | |
| David Dodds | | N |
| Diane Fraser | Y | |
| John Donnelly | | N |
| David Dunlop | | N |
| Evelyn Thomson | | N |
| Garry Currie | Y | |
| Gordon McLean | Y | |
| Janette Fraser | Y | |
| Gary Jenkins | | N |
| Jim Hackett | Y | |
| Jonathan Best | Y | |
| Kevin Gauld | Y | |
| Rosemary Twohig | Y | |
| Kay Sandilands | | N |
| Ann Muir | Y | |
| Liz Bruce | | N |
| Tom Haswell | | N |
| Matt McLaughlin | | N |
| Elizabeth Stow | Y | |
| Stuart Burnside | | N |

Appendix Three

OB Forms

OUTLINE BUSINESS CASE FOR PREFERRED OPTION **COST FORM OB1**

TRUST/PROVIDER UNIT* West of Scotland Regional Planning Group

SCHEME: West of Scotland Satellite Radiotherapy Unit – Monklands Hospital

PHASE: N/A

PROJECT DIRECTOR: Diane Fraser

CAPITAL COSTS SUMMARY

| | Cost Exc VAT £ | VAT £ | Cost Inc. VAT £ |
|---|-------------------|---------------|--------------------|
| 1. Department Costs (from Form OB2) | £8,335,247.33 | £1,667,049.47 | £10,002,296.80 |
| 2. On-Costs (a) (from Form OB3) (8.14% of Department Cost) | £678,635.00 | £135,727.00 | £814,362.00 |
| 3. Works Cost Total (1+2) (Tender Price index level 1985 = 100 base) | £9,013,882.33 | £1,802,776.47 | £10,816,658.80 |
| 4. Provisional location adjustment (if applicable) (- % of £) (b) | £0 | £0 | £0 |
| 5. Sub Total (3+4): | £9,013,882.33 | £1,802,776.47 | £10,816,658.80 |
| 6. Fees (c) (19.17% of sub-total 5) | £1,728,457.05 | £345,691.41 | £2,074,148.46 |
| 7. Non-Works Costs (from Form OB4) (c) LAND OTHER | £60,000.00 | £12,000.00 | £72,000.00 |
| 8. Equipment Cost (from Form OB2) (- % of Department Cost) | £5,750,000.00 | £1,150,000 | £6,900,000.00 |
| 9. Contingencies (optimism bias) | £1,324,187.15 | £264,837.43 | £1,589,024.58 |
| 10. TOTAL (for approval purposes) | £17,876,526.53 | £3,575,305.31 | £21,451,831.84 |
| 11. Inflation Adjustments (f) | £0 | £0 | £0 |
| 12. FORECAST OUTTURN TAKEOVER | £17,876,526.53 | £3,575,305.31 | £21,451,831.84 |

| | | | |
|---------------------|--|--|--|
| BUSINESS CASE TOTAL | | | |
|---------------------|--|--|--|

| Cash Flow Year: | SOURCE | | | £ |
|--------------------|----------------|---------------------|-----------------------------|-------------------------|
| | EFL | OTHER GOVERNMENT | PRIVATE | |
| 2013/2014 | £531,907.86 | | | £531,907.86 |
| 2014/2015 | £9,280,363.84 | | | £9,280,363.84 |
| 2015/2016 | £11,639,560.14 | | | £11,639,560.14 |
| | | | Total Cost (as 10 above) | £21,451,831.84 ===== |

This form completed by: Currie & Brown

Date.....

Address: Scotland Hub

Building 3, 2 Parklands Avenue

Maxim Office Park

Eurocentral

Lanarkshire ML1 4WQ Telephone No: 0845 2878500

Authorised by: Project Director

OUTLINE BUSINESS CASE FOR PREFERRED OPTION**COST FORM OB2**

TRUST/PROVIDER UNIT* West of Scotland Regional Planning Group

SCHEME: West of Scotland Satellite Radiotherapy Facility – Monklands Hospital

PHASE: N/A

PROJECT DIRECTOR: Diane Fraser

CAPITAL COSTS: DEPARTMENT COSTS AND EQUIPMENT COSTS

| Functional Content | Functional Units/ | N/A/C/ (2) | DCG Schedule | Equipment |
|--------------------|-------------------|------------|--------------|-----------|
|--------------------|-------------------|------------|--------------|-----------|

| | Space Requirement (1) | | Date..... | Cost |
|---|------------------------|---|---------------|---------------|
| Entrance facilities | 163.99m ² | N | £437,033.35 | |
| CT Planning & vs | 430.91m ² | N | £1,292,715.00 | |
| Treatment suite | 1,063.98m ² | N | £4,894,308.00 | |
| Physics planning | 165.14m ² | N | £412,850.00 | |
| Technical support | 105.80m ² | N | £190,440.00 | |
| IT infrastructure | 28.87m ² | N | £46,184.00 | |
| Staff facilities | 100.97m ² | N | £181,746.00 | |
| Stores | 48.07m ² | N | £57,684.00 | |
| Offices | 64.17m ² | N | £102,286.98 | |
| Internal plant areas | 50.00m ² | N | £50,000.00 | |
| External plant areas | 200.00m ² | N | £340,000.00 | |
| Roof plant areas | 300.00m ² | N | £330,000.00 | |
| | | | £8,335,247.33 | |
| Less abatement for Transferred equipment if applicable (.....N/A.....%) (3) | | | | £5,750,000.00 |

OUTLINE BUSINESS CASE FOR PREFERRED OPTION**COST FORM OB3**

TRUST/PROVIDER UNIT* West of Scotland Regional Planning Group
 SCHEME: West of Scotland Satellite Radiotherapy Facility – Monklands Hospital

PHASE: N/A

CAPITAL COSTS: ON-COSTS

| | | Estimated Cost (exc VAT) | Percentage of Departmental Cost |
|--|-------------|-----------------------------|---------------------------------------|
| 1. Communications | £ | | |
| a. Space | £ included | | |
| b. Lifts | £ included | | |
| | — | | |
| 2. 'External' Building Works (1) | | | £ 0 |
| a. Drainage | £35,240.00 | | |
| b. Roads, paths, parking | | | |
| c. Site layout, walls, fencing, gates | £44,055.00 | | |
| d. Builders work for engineering | | | |
| services outside buildings | — | | |
| 3. 'External" Engineering Works (1) | | | £79,295.00 |
| a. Steam, condensate, heating, hot water and gas supply mains | £13,215.00 | | |
| b. Cold water mains and storage | £26,430.00 | | |
| c. Electricity mains, sub-stations, stand-by generation plant | £44,050.00 | | |
| d. Calorifiers and associated plant | | | |
| e. Miscellaneous - IT | £17,630.00 | | |
| 4. Auxillary Buildings | — | | |
| 5. Other on-costs and abnormals (2) | | | £101,325.00 |
| a. Building: | | | |
| 1. Site preparation | £ 17,620.00 | | |
| 2. Piling | £132,160.00 | | |

| | | | |
|-------------------------------------|-------------|-------|-------------|
| 3. Buildability | £176,210.00 | | |
| b. Engineering : | | | |
| 1. Utilities connections | £150,000.00 | | |
| 2. Alterations to existing services | £ 22,025.00 | | |
| | ————— | | |
| | | | £498,015.00 |
| Total On-Costs to Summary OB1 | £678,635.00 | 8.14% | |

Notes: Must be based on scheme specific assessments/measurements; attach details to define scope of works as appropriate.

* Delete as appropriate

(1) 'External' to Departments

(2) Identify any enabling or preliminary works to prepare the site in advance e.g. demolitions; service diversions; decanting costs; site investigation and other exploratory works.

This form completed by: Currie & Brown

Telephone No:

Date:

OUTLINE BUSINESS CASE FOR PREFERRED OPTION**COST FORM OB4**

TRUST/PROVIDER UNIT* West of Scotland Regional Planning Group

SCHEME: West of Scotland Satellite Radiotherapy Facility – Monklands.

PHASE: N/A

CAPITAL COSTS: FEES AND NON-WORKS COSTS

| | | Percentage of Works Cost |
|--|-----------------|-----------------------------|
| 1. Fees (including 'in-house' resource costs) | | |
| a. Architects |) | |
| b. Structural Engineers |) | |
| c. Mechanical Engineers |) | |
| d. Electrical Engineers |) | |
| e. Quantity Surveyors |) £1,728,457.05 | |
| f. Project Management |) | |
| g. Legal Fees |) | |
| h. Site Supervisor |) | . |
| i. Others (specify) |) | |
| Total Fees to Summary (OB1) | £1,728,457.05 | 19.17% |

| | |
|--|------------|
| 2. Non-Works Costs | £ |
| a. Land Purchase costs and associated legal fees | |
| b. Statutory and Local Authority changes | |
| c. Building Regulations and Planning Fees | £60,000.00 |
| d. Other (specify) e.g. decanting costs | |
| Non-Works Costs to Summary (OB1) | £60,000.00 |

Notes:

* Delete as appropriate

This form completed by: Currie & Brown

Telephone No: 0845 2878500

Date:

OUTLINE BUSINESS CASE FOR PREFERRED OPTION **COST FORM OB1**

TRUST/PROVIDER UNIT* West of Scotland Regional Planning Group

SCHEME: West of Scotland Satellite Radiotherapy Unit – Forth Valley

PHASE: N/A

PROJECT DIRECTOR: Diane Fraser

CAPITAL COSTS SUMMARY

| | Cost Exc VAT £ | VAT £ | Cost Inc. VAT £ |
|---|-------------------|---------------|--------------------|
| 1. Department Costs (from Form OB2) | £8,335,247.33 | £1,667,049.47 | £10,002,296.80 |
| 2. On-Costs (a) (from Form OB3) (10.26 % of Department Cost) | £854,835.00 | £170,967.00 | £1,025,802.00 |
| 3. Works Cost Total (1+2) (Tender Price index level 1985 = 100 base) | £9,190,082.33 | £1,838,016.47 | £11,028,089.80 |
| 4. Provisional location adjustment (if applicable) (% of £) (b) | £0 | £0 | £0 |
| 5. Sub Total (3+4): | £9,190,082.33 | £1,838,016.47 | £11,028,089.80 |
| 6. Fees (c) (18.23% of sub-total 5) | £1,762,816.05 | £352,563.21 | £2,115,379.27 |
| 7. Non-Works Costs (from Form OB4) (c) LAND OTHER | £60,000.00 | £12,000.00 | £72,000.00 |
| 8. Equipment Cost (from Form OB2) (- % of Department Cost) | £5,750,000.00 | £1,150,000 | £6,900,000.00 |
| 9. Contingencies (optimism bias) | £1,341,031.87 | £268,206.37 | £1,609,238.24 |
| 10. TOTAL (for approval purposes) | £18,103,930.26 | £3,620,786.05 | £21,724,716.31 |
| 11. Inflation Adjustments (f) | £0 | £0 | £0 |
| 12. FORECAST OUTTURN TAKEOVER BUSINESS CASE TOTAL | £18,103,930.26 | £3,620,786.05 | £21,724,716.31 |

| Cash Flow Year: | SOURCE | | | £ |
|--------------------|----------------|---------------------|-----------------------------|-------------------------|
| | EFL | OTHER GOVERNMENT | PRIVATE | |
| 2013/2014 | £538,674.16 | | | £538,674.16 |
| 2014/2015 | £9,398,417.49 | | | £9,398,417.49 |
| 2015/2016 | £11,787,624.66 | | | £11,787,624.66 |
| | | | Total Cost (as 10 above) | £21,724,716.31 ===== |

This form completed by: Currie & Brown

Date.....

Address: Scotland Hub

Building 3, 2 Parklands Avenue

Maxim Office Park

Eurocentral

Lanarkshire ML1 4WQ Telephone No: 0845 2878500

Authorised by: Project Director

OUTLINE BUSINESS CASE FOR PREFERRED OPTION**COST FORM OB2**

TRUST/PROVIDER UNIT* West of Scotland Regional Planning Group

SCHEME: West of Scotland Satellite Radiotherapy Facility – Forth Valley

PHASE: N/A

PROJECT DIRECTOR: Diane Fraser

CAPITAL COSTS: DEPARTMENT COSTS AND EQUIPMENT COSTS

| Functional Content | Functional Units/ | N/A/C/ (2) | DCG Schedule | Equipment |
|--------------------|-------------------|------------|--------------|-----------|
|--------------------|-------------------|------------|--------------|-----------|

| | Space Requirement (1) | | Date..... | Cost |
|---|------------------------|---|---------------|---------------|
| Entrance facilities | 163.99m ² | N | £437,033.35 | |
| CT Planning & vs | 430.91m ² | N | £1,292,715.00 | |
| Treatment suite | 1,063.98m ² | N | £4,894,308.00 | |
| Physics planning | 165.14m ² | N | £412,850.00 | |
| Technical support | 105.80m ² | N | £190,440.00 | |
| IT infrastructure | 28.87m ² | N | £46,184.00 | |
| Staff facilities | 100.97m ² | N | £181,746.00 | |
| Stores | 48.07m ² | N | £57,684.00 | |
| Offices | 64.17m ² | N | £102,286.98 | |
| Internal plant areas | 50.00m ² | N | £50,000.00 | |
| External plant areas | 200.00m ² | N | £340,000.00 | |
| Roof plant areas | 300.00m ² | N | £330,000.00 | |
| | | | £8,335,247.33 | |
| Less abatement for Transferred equipment if applicable (.....N/A.....%) (3) | | | | £5,750,000.00 |

OUTLINE BUSINESS CASE FOR PREFERRED OPTION**COST FORM OB3**

TRUST/PROVIDER UNIT* West of Scotland Regional Planning Group
SCHEME: West of Scotland Satellite Radiotherapy Facility – Forth Valley

PHASE: N/A

CAPITAL COSTS: ON-COSTS

| | | Estimated Cost (exc VAT) | Percentage of Departmental Cost |
|--|-------------|-----------------------------|---------------------------------------|
| 1. Communications | £ | | |
| a. Space | £ included | | |
| b. Lifts | £ included | | |
| | — | | |
| 2. 'External' Building Works (1) | | | £ 0 |
| a. Drainage | £52,860.00 | | |
| b. Roads, paths, parking | | | |
| c. Site layout, walls, fencing, gates | £88,105.00 | | |
| d. Builders work for engineering | | | |
| services outside buildings | — | | |
| 3. 'External" Engineering Works (1) | | | £140,965.00 |
| a. Steam, condensate, heating, | | | |
| hot water and gas supply mains | £66,080.00 | | |
| b. Cold water mains and storage | £61,670.00 | | |
| c. Electricity mains, sub-stations, | | | |
| stand-by generation plant | £88,105.00 | | |
| d. Calorifiers and associated plant | | | |
| e. Miscellaneous - IT | £30,840.00 | | |
| 4. Auxillary Buildings | | | |
| | — | | |
| 5. Other on-costs and abnormals (2) | | | £246,695.00 |
| a. Building: | | | |
| 1. Site preparation | £ 52,860.00 | | |
| 2. Piling | £110,130.00 | | |

| | | | |
|------------------------------------|--------------|--------|-------------|
| 3. Buildability | £0 | | |
| b. Engineering : | | | |
| 1. Utilities connections | £150,000.00 | | |
| 2. Alterations to existing culvert | £ 154,185.00 | | |
| | ————— | | |
| | | | £467,175.00 |
| Total On-Costs to Summary OB1 | £854,835.00 | 10.26% | |

Notes: Must be based on scheme specific assessments/measurements; attach details to define scope of works as appropriate.

* Delete as appropriate

(1) 'External' to Departments

(2) Identify any enabling or preliminary works to prepare the site in advance e.g. demolitions; service diversions; decanting costs; site investigation and other exploratory works.

This form completed by: Currie & Brown

Telephone No:

Date:

OUTLINE BUSINESS CASE FOR PREFERRED OPTION **COST FORM OB4**

TRUST/PROVIDER UNIT* West of Scotland Regional Planning Group

SCHEME: West of Scotland Satellite Radiotherapy Facility – Forth Valley

PHASE: N/A

CAPITAL COSTS: FEES AND NON-WORKS COSTS

| | | Percentage of Works Cost |
|--|-----------------|-----------------------------|
| 1. Fees (including 'in-house' resource costs) |) | |
| a. Architects |) | |
| b. Structural Engineers |) | |
| c. Mechanical Engineers |) | |
| d. Electrical Engineers |) | |
| e. Quantity Surveyors |) £1,762,816.05 | |
| f. Project Management |) | |
| g. Legal Fees |) | |
| h. Site Supervisor |) | |
| i. Others (specify) |) | |
| Total Fees to Summary (OB1) | £1,762,816.05 | 19.17% |

| | |
|--|------------|
| 2. Non-Works Costs | £ |
| a. Land Purchase costs and associated legal fees | |
| b. Statutory and Local Authority changes | |
| c. Building Regulations and Planning Fees | £60,000.00 |
| d. Other (specify) e.g. decanting costs | |
| Non-Works Costs to Summary (OB1) | £60,000.00 |

Notes:

* Delete as appropriate

This form completed by: Currie & Brown

Telephone No: 0845 2878500

Date:

Appendix Four

Option Appraisal Workshop Attendees

Option Appraisal Event – Attendance Sheet

Monday 15th April – Conference Room, METC, Kirklands, Bothwell

| | | | |
|----------------|----------|-------------------|---|
| 1. Bob | Brown | Confirmed | Capital Planning, NHS Lanarkshire |
| 2. Lesley | Cairns | Confirmed | Head of Therapy Radiography, Beatson West of Scotland Cancer Centre |
| 3. Elsbeth | Campbell | Confirmed | Head of Communications, NHS Forth Valley & Member of Project Board |
| 4. Tony | Cocozza | For Alan McCubbin | Capital Planning, NHS Greater Glasgow & Clyde |
| 5. Vicky | Crichton | Confirmed | Scottish Cancer Coalition |
| 6. Garry | Currie | Confirmed | Head of Radiotherapy Physics West of Scotland Beatson Cancer Centre & Member of Project Board |
| 7. David | Dodds | Confirmed | Consultant Clinical Oncologist West of Scotland Beatson Cancer Centre & Member of Project Board |
| 8. David | Dunlop | Confirmed | Clinical Director, West of Scotland Beatson Cancer Centre & Member of Project Board |
| 9. Diane | Fraser | Confirmed | Project Manager, Capital Planning, NHS Greater Glasgow & Clyde & Member of Project Board |
| 10. Janette | Fraser | Confirmed | Senior Planning Manager, NHS Forth Valley & Project Board Member |
| 11. Kevin | Gauld | Confirmed | Project Manager, Currie & Brown |
| 12. Jim | Hackett | Confirmed | Project Manager, Currie & Brown |
| 13. Dr Stephen | Harrow | Confirmed | Consultant Clinical Oncologist, West of Scotland Beatson Cancer Centre |
| 14. Tom | Haswell | Confirmed | Patient Representative & Member of West Regional Cancer Advisory Group |

| | | | |
|-----------------|------------|-----------|--|
| 15. Dr Jonathan | Hicks | Confirmed | Consultant Clinical Oncologist Beatson Cancer Centre |
| 16. Gary | Jenkins | Confirmed | General Manager for Cancer Services, West of Scotland Beatson Cancer Centre & Member of Project Board |
| 17. Heather | Knox | Confirmed | Director of Regional Planning, West of Scotland & Chair of Project Board |
| 18. Colin | Lauder | Confirmed | Head of Planning & Development, NHS Lanarkshire & Member of Project Board |
| 19. Gordon | McLean | Confirmed | Project Support Manager, West of Scotland Regional Planning & Member of Project Board |
| 20. Peter | Moran | Confirmed | Keppie Design |
| 21. Ann | Muir | Confirmed | Patient Representative & Member of Project Board |
| 22. Liz | Preston | Confirmed | Cancer Manager, NHS Lothian, representing South East & Tayside Planning Group (SEAT) |
| 23. Kay | Sandilands | Confirmed | Head of Workforce Modernisation, NHS Lanarkshire & Member of Project Core Group |
| 24. Helen | Stewart | Confirmed | Deputy Head of Therapy Radiography, Beatson West of Scotland Cancer Centre |
| 25. Elizabeth | Stow | Confirmed | National Officer Scotland, The Society of Radiographers & Member of Project Board |
| 26. Evelyn | Thomson | Confirmed | West of Scotland Cancer Network |
| 27. Rosemary | Twohig | Confirmed | Project Support, NHS Greater Glasgow & Clyde |
| 28. Stan | Wright | Confirmed | Consultant Physician, NHS Forth Valley & Member of Project Board |

Appendix Five

Schedule of Accommodation

West of Scotland Satellite Radiotherapy Facility

Schedule of Accommodation Version 7: 28/06/13

| sub-department | IA | SOA - V7 | | | Comments |
|---|--------------------|--------------------|--------|---------------|---|
| | Nett Floor Area m2 | Nett Floor Area m2 | + / - | Gross Area m2 | |
| Entrance facilities | 96.0 | 96.5 | 0.5 | 142.6 | |
| CT Planning & Virtual Sim | 250.0 | 253.5 | 3.5 | 374.7 | |
| Treatment Suite | 783.0 | 626.0 | -157.0 | 925.2 | |
| Physics Planning Suite | 55.0 | 103.0 | 48.0 | 143.6 | |
| Tech Support | 0.0 | 66.0 | 66.0 | 92.0 | |
| IT Infrastructure | 0.0 | 18.0 | 18.0 | 25.1 | |
| Staff Facilities | 76.0 | 63.0 | -13.0 | 87.8 | |
| Mould Room | 0.0 | 0.0 | 0.0 | 0.0 | |
| Stores | 41.0 | 30.0 | -11.0 | 41.8 | |
| Offices | 0.0 | 40.0 | 40.0 | 55.8 | |
| Total | 1301.00 | 1296.00 | -5.0 | 1888.6 | |
| Communication | | | | | |
| Corridors - Hertz Public Circulation | | | | | |
| Corridors - FM Circulation | | | | | |
| Atria / Public Spaces | | | | | |
| Vertical Comms Lifts | | | | | |
| Vertical Comms Stairs | | | | | |
| Generic Communication allowance - 15% of Dept Gross - until above areas are defined | | | | 15.00% | |
| Total | | | | 283.3 | |
| Plant | | | | | |
| Gen plant space for building services | | | | | |
| Energy Centre | | | | | |
| Dept/Equip specific plant space | | | | | |
| RO plant room | | | | | |
| Plant allowance - Based on Grampian Radiotherapy Centre | | | | 550.0 | External / Internal plantroom split to be developed |
| Total | | | | 550.0 | |
| Circulation allowance @ 41% of Dept nett | 533.41 | | | | |
| Services/ utility allowance | 500.00 | | | | |
| Gross Area | 2334.41 | | | | |
| Wall allowance @ 10% of Dept gross | 233.44 | | | | |
| Project Total | 2567.85 | | | 2721.9 | |

Appendix Six

Risk Register

| Risk No. | Risk Category | Risk Heading | Risk Description | Pre - Mitigation | | | | | Risk Effect | Risk Owner (Public / Private) | Risk Manager | Mitigation | Post Mitigation | | | | |
|----------|---------------|----------------------|--|--------------------------|--------|----------|------------|--|---------------------|----------------------------------|--|------------|--------------------------|--------|----------|----------------|----------------|
| | | | | Probability (Likelihood) | Impact | PI Score | Risk Level | | | | | | Probability (Likelihood) | Impact | PI Score | Risk Level | Risk Opened By |
| 1 | Business | Service | Failure to identify appropriate stakeholders | 2 | 4 | 8 | Medium | Failure to meet criteria leading to major redesign | RPG | Heather Knox/ Elsbeth Campbell | Early engagement and communication | 1 | 3 | 3 | Low | Currie & Brown | 06th May |
| 2 | Business | Service | Failure to engage with appropriate stakeholders | 2 | 4 | 8 | Medium | Failure to meet criteria leading to major redesign | Project Board | Heather Knox/ Elsbeth Campbell | Early engagement and communication | 1 | 3 | 3 | Low | Currie & Brown | 06th May |
| 3 | Business | Service | Stakeholders have contradictory aspirations | 3 | 3 | 9 | Medium | Unclear brief leading to programme pressure | Project Board | Currie & Brown | Feedback and Communication (Clarity in IA) | 1 | 2 | 2 | Low | Currie & Brown | 06th May |
| 4 | Business | Service | Professional expertise is not engaged at the appropriate time | 1 | 4 | 4 | Medium | Project progress affected | Project Board/ PSCP | Heather Knox/ Diane Fraser/ PSCP | Governance Structure and Appointment process for advisors | 1 | 2 | 2 | Low | Currie & Brown | 06th May |
| 5 | Business | Build | Failure to adequately determine the overall programme duration | 2 | 4 | 8 | Medium | Inability to meet demand | Project Board | Currie & Brown/ PSCP | Engagement/ Ongoing review/ Benchmarking | 2 | 4 | 8 | Medium | Currie & Brown | 06th May |
| 6 | Business | Planning | Failure to obtain Outline Planning Permission | 2 | 4 | 8 | Medium | Project progress affected | PSCP | PSCP | Early engagement and communication | 1 | 3 | 3 | Low | Currie & Brown | 06th May |
| 7 | Business | Funding | Failure to control scope creep | 2 | 3 | 6 | Medium | Increased cost and programme issues | Project Board | Currie & Brown/ Diane Fraser | Governance and Change Control | 2 | 3 | 6 | Medium | Currie & Brown | 06th May |
| 8 | Business | Funding | Failure to control budget creep | 2 | 3 | 6 | Medium | Increased cost and programme issues | Project Board | Diane Fraser/ Cost Advisor | Governance and Change Control | 2 | 3 | 6 | Medium | Currie & Brown | 06th May |
| 9 | 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 | Pre planning and Survey Work | 1 | 2 | 2 | Low | Currie & Brown | 06th May |
| 10 | Service | Service | Failure to identify appropriate staffing for the Satellite | 2 | 4 | 8 | Medium | Reduced service | Project Board | Kay Sandilands | Workforce Modelling Tools | 1 | 2 | 2 | Low | Currie & Brown | 06th May |
| 11 | Service | Service | Failure to attract appropriately qualified staff for the Satellite | 4 | 4 | 16 | High | Reduced service/ recruitment and phasing of funding | Project Board | Heather Knox | Detailed Recruitment Plan | 4 | 4 | 16 | High | Currie & Brown | 06th May |
| 12 | Business | Business | Failure to adequately resource OBC | 3 | 3 | 9 | Medium | Delay to OBC | Project Board | Heather Knox | Performance Management of Process | 1 | 2 | 2 | Low | Currie & Brown | 06th May |
| 13 | Business | Funding | Failure to secure available capital funding | 3 | 5 | 15 | High | Major project scope review | RPG | Ian Ross - RPG Chair | Early and ongoing dialogue with SGHD | 3 | 5 | 15 | High | Currie & Brown | 06th May |
| 14 | Business | Funding | Failure to secure appropriate revenue funding level | 4 | 4 | 16 | High | Major project scope review | RPG | Ian Ross - RPG Chair | Early and ongoing dialogue with WoS Health Boards | 4 | 4 | 16 | High | Currie & Brown | 06th May |
| 15 | Business | Funding | Affordability requires altered design causing programme delays | 2 | 3 | 6 | Medium | Design review and delay | RPG | Ian Ross - RPG Chair | Governance and Change Control | 2 | 3 | 6 | Medium | Currie & Brown | 06th May |
| 16 | Service | Design | Design solution does not meet stakeholder aspirations | 2 | 4 | 8 | Medium | Functionality/ morale affected Service impacted Redesign work required | Project Board | PSCP/ Currie & Brown | Early engagement and communication | 2 | 3 | 6 | Medium | Currie & Brown | 06th May |
| 17 | Service | Legislative | Failure to achieve BREEAM Excellent rating | 3 | 3 | 9 | Medium | Increased Cost | Project Board | PSCP/ Currie & Brown | Early engagement of BREEAM Assessor | 3 | 3 | 9 | Medium | Currie & Brown | 06th May |
| 18 | Service | Environmental | Disturbance to adjacent buildings and users - Monklands | 3 | 3 | 9 | Medium | Cost and Delay - loss of service | PSCP | PSCP | Pre Planning and Communication | 3 | 3 | 9 | Medium | Currie & Brown | 06th May |
| 19 | Service | Build | Interfacing with host board existing systems causes disruption/ loss of service | 1 | 4 | 4 | Medium | Service interruption | PSCP | PSCP | Cross Board Communication within Project Board | 1 | 4 | 4 | Medium | Currie & Brown | 06th May |
| 20 | Service | Design | Failure to achieve AEDET aspirations | 1 | 2 | 2 | Low | Design review | PSCP | PSCP | Early engagement and communication | 1 | 2 | 2 | Low | Currie & Brown | 06th May |
| 21 | Service | Service | Over/ under provision of facilities due to a disconnect between Boards | 3 | 3 | 9 | Medium | Cost and redesign | Project Board | Project Board | Cross Board Communication within Project Board | 3 | 3 | 9 | Medium | Currie & Brown | 06th May |
| 22 | Service | Build | Overly ambitious construction and commissioning programme | 3 | 4 | 12 | High | Programme delay and cost increase | PSCP | PSCP | Detailed Planning and Review of Programme | 3 | 4 | 12 | High | Currie & Brown | 06th May |
| 23 | Service | Project Intelligence | Lack of as built information | 2 | 3 | 6 | Medium | Programme delay and cost increase | Project Board | Bob Brown | Early Liaison with Host Board | 1 | 2 | 2 | Low | Currie & Brown | 06th May |
| 24 | 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 | Project Board | Diane Fraser | Early engagement and communication | 1 | 2 | 2 | Low | Currie & Brown | 06th May |
| 25 | Service | Service | Clinical service Commissioning | 2 | 3 | 6 | Medium | Delay to opening | Project Board | Garry Currie | Detailed planning and review | 2 | 3 | 6 | Medium | Currie & Brown | 06th May |
| 26 | Business | Business | Programme slippage due to delayed RPG/ Boards approval of OBC | 2 | 3 | 6 | Medium | Delay and Service impact | RPG | Ian Ross - RPG Chair | Approval processes and Communication | 2 | 3 | 6 | Medium | Currie & Brown | 06th May |
| 27 | Business | Business | Programme slippage due to delayed SGHD approval of OBC | 3 | 3 | 9 | Medium | Delay and Service impact | RPG | Ian Ross - RPG Chair | Approval processes and Communication | 3 | 3 | 9 | Medium | Currie & Brown | 06th May |
| 28 | Business | Planning | Jan 2014 Building Regs significantly more onerous | 3 | 4 | 12 | High | Redesign and Cost | PSCP | PSCP | Full fee submitted for Staged Warrant ahead of Regs being enforced | 2 | 4 | 8 | Medium | Laing O'Rourke | 29th May |
| 29 | Business | Service | Delays in Radiotherapy equipment procurement and influence on programme | 3 | 4 | 12 | High | Delay and Service impact | Project Board | Garry Currie | Detailed Planning and Review Do not wait for OBC sign off to start | 2 | 4 | 8 | Medium | Garry Currie | 10th June |

Appendix Seven

Statements of Financial Support for Revenue Costs

Financial Services Division
Greenan House
PO Box 13
Ailsa Hospital
Dalmellington Road
AYR, KA6 6AB



| | | |
|--|--------------|---------------------------------|
| Heather Knox | Date | 27 June 2013 |
| West of Scotland Director of Regional Planning | Your Ref | |
| NHS Forth Valley | Our Ref | DL/KH/217 |
| Carseview House | Enquiries to | Derek Lindsay |
| Castle Business Park | Extension | 13326 |
| STIRLING | Direct line | 01292 513326 |
| FK9 4SW | E-mail | derek.lindsay@aapct.scot.nhs.uk |

Dear Heather

Satellite Radiotherapy Facility Outline Business Case (OBC)

At the recent NHS Ayrshire and Arran Board Meeting on 24 June 2013, members considered the above OBC. Some concerns were raised regarding the significantly increased cost per fraction in the satellite unit compared to the Beatson Oncology Centre given that accessibility will be no better for Ayrshire and Arran residents in terms of distance to travel for radiotherapy.

It was however acknowledged that capacity at the Beatson Oncology Centre was insufficient and there was a need for the creation of a satellite radiotherapy facility. On that basis NHS Ayrshire and Arran support the OBC and would meet our share of the revenue funding for the unit, but would expect Scottish Government to provide the capital funding.

We would however ask that the proposed staffing costs in the OBC be benchmarked against the other facilities in Scotland of a similar size and also some similar satellite facilities in England and that this information be shared with us.

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

| | |
|--------------|--|
| Date | 3 July 2013 |
| Our Ref | LA/AD |
| Enquiries to | Laura Ace |
| Direct Line | 01698 858185 |
| Fax | 01698 858288 |
| Email | laura.ace@lanarkshire.scot.nhs.uk |

Dear Heather

I can confirm that the Radiotherapy Satellite OBC was approved by the NHS Lanarkshire Board on 26 June 2013 and that commitment has been given to our share of the revenue costs. It is assumed the capital funding would be provided from central SG funds.

Like other Boards in moving towards FBC, we support further work to test and reduce the revenue costs and to explore the option of only fitting out 3 bunkers initially to reduce initial capital and depreciation costs.

Yours sincerely

A handwritten signature in black ink that appears to read "Laura Ace".

LAURA ACE
DIRECTOR OF FINANCE

**Dumfries and Galloway
NHS Board**

Chief Executive's Office

Mid North
Crichton Hall
Bankend Road
Dumfries
DG1 4TG

Tel: 01387 272743
Email: linda.mckie@nhs.net



Ref: CM/LW
Date: 3rd July 2013

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

Dear Heather

SATELLITE RADIOTHERAPY FACILITY OUTLINE BUSINESS CASE (OBC)

I confirm support from NHS Dumfries and Galloway for the Outline Business Case (OBC) for the Satellite Radiotherapy Facility.

It was acknowledged that capacity at the Beatson Oncology Centre was insufficient and there was a need for the creation of a satellite radiotherapy facility. On that basis NHS Dumfries and Galloway support the OBC and would meet our share of the revenue funding for the unit, but would expect Scottish Government to provide the capital funding. Note that Dumfries and Galloway's pathway is through the SCAN network and, therefore, our activity numbers are relatively small.

We would ask that the proposed staffing costs in the OBC be benchmarked against the other facilities in Scotland of a similar size and also some similar satellite facilities in England and that this information be shared with us.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Jeff Ace'.

Jeff Ace
Chief Executive Officer

NHS Forth Valley

Carseview House
Castle Business Park
Stirling
FK9 4SW

Telephone: 01786 463031
Fax: 01786 451474



Heather Knox
West of Scotland Director of Regional Planning
NHS Forth Valley
Carseview House
Castle Business Park
Stirling
FK9 4SW

| | |
|--------------|--|
| Date | 4 July 2013 |
| Enquiries to | Fiona Mackenzie |
| Extension | 210 |
| Direct Line | 01786 457210 |
| Email | fmackenzie@nhs.net |

Dear Heather

Satellite Radiotherapy Facility Outline Business Case (OBC)

I write to confirm the support of NHS Forth Valley towards funding a share of total revenue costs as outlined in the draft OBC, with the expectation that capital costs will be funded centrally.

I am aware that planned costs for the unit continue to be refined in line with overall affordability and best value for money but would expect the costs to be contained within or below the values as set out in the draft OBC.

Yours Sincerely

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

Fiona Ramsay
Director of Finance

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.nhsogg.org.uk



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

Date: 4 July 2013

Our Ref: RC/GD

Enquiries to: Robert Calderwood

Direct Line: 0141-201-4642

E-mail: robert.calderwood@nhs.scot.nhs.uk

Dear Heather

I can confirm that NHS Greater Glasgow and Clyde will commit to our share of the revenue costs associated with the West of Scotland Radiotherapy Satellite Facility. The full details will be endorsed by our NHS Board in due course. It is assumed the capital funding will be provided from central Scottish Government funds.

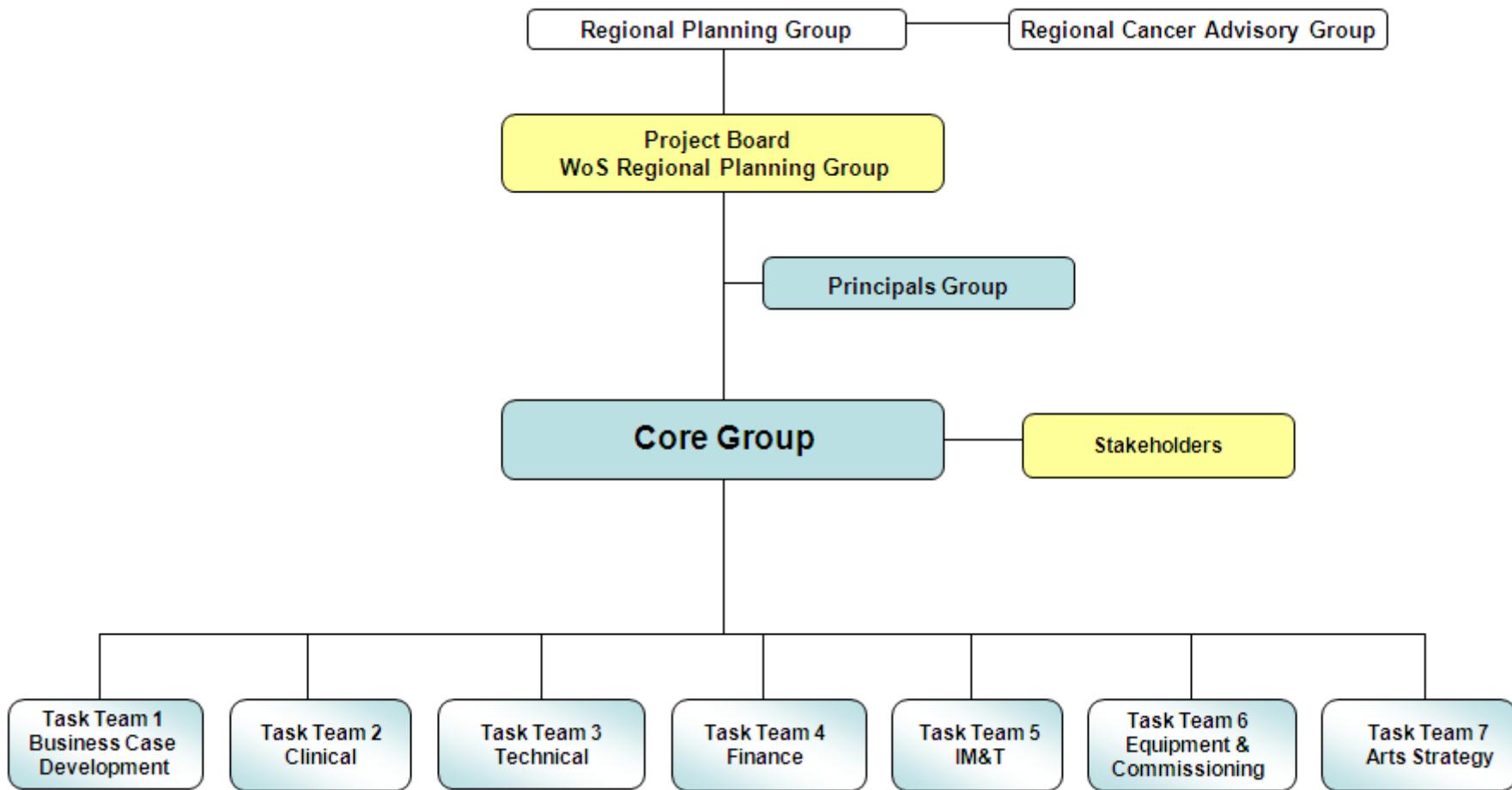
Yours sincerely

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

ROBERT CALDERWOOD
Chief Executive

Appendix Eight

Project Structure and Terms of Reference



| Meeting | Attendees | Terms of Reference |
|---|---|--|
| Projects Principals Group – Quarterly Meeting | Project Sponsor – Heather Knox Project Director – Diane Fraser Senior Clinician / End User - TBC PSCP – Steve Irvine PSC PM – Jim Hackett | 1. Focus on strategic issues. 2. Receive monthly updates from Core Group. 3. To make overall decisions about how to manage the relationship. |
| Project Board – Monthly | NHS Ayrshire & Arran Alexandra McGuire Peter McLean NHS Forth Valley Elsbeth Campbell Janette Fraser Dr Stan Wright NHS Greater Glasgow & Clyde Dr David Dunlop Alan McCubbin David Dodds John Donnelly Diane Fraser | 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. |

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| | <p>Garry Currie</p> <p>Gary Jenkins</p> <p>Jonathan Best</p> <p>Evelyn Thomson (West of Scotland Cancer Network)</p> <p>Dr Hilary Dobson (West of Scotland Cancer Network)</p> <p>NHS Lanarkshire</p> <p>Colin Lauder</p> <p>Dr Hakim BenYounes</p> <p>West of Scotland Planning</p> <p>Heather Knox</p> <p>Gordon McLean</p> <p>Christine Livie (Admin support)</p> <p>Staff Side</p> <p>Stuart Burnside - 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> | |
|--|--|--|

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| | <p>Liz Bruce</p> <p>PSC PM</p> <p>Jim Hackett</p> | |
| Core Group - Monthly | <p>Heather Knox - Chair</p> <p>NHS Project Director / Manager - Diane Fraser</p> <p>PSC Project Manager – Jim Hackett</p> <p>PSC Cost Advisor – TBC</p> <p>PSCP – Laing O'Rourke</p> <p>Christine Livie - Admin Support</p> <p>Gordon McLean – West of Scotland Planning</p> <p>NHS Forth Valley</p> <p>Janette Fraser</p> <p>NHS Greater Glasgow & Clyde</p> <p>Jonathan Best</p> <p>Dr David Dunlop</p> <p>John Donnelly</p> <p>Garry Currie</p> <p>Gary Jenkins</p> <p>Alan McCubbin</p> | <ol style="list-style-type: none"> 1. Core Group to be chaired by the Director of Regional Planning, minutes taken 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 delivery of Scheme Project during the various project stages. 6. Reviewing of programme, cost projections and ensure decisions are well founded. |

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| | <p>Evelyn Thomson (West of Scotland Cancer Network)</p> <p>NHS Lanarkshire</p> <p>Bob Brown</p> <p>Colin Lauder</p> <p>Kay Sandilands</p> | |
| Task Team 1 – Business Case Development | <p>Jim Hackett – Lead</p> <p>Heather Knox</p> <p>Gordon McLean</p> <p>Garry Currie</p> <p>Colin Lauder</p> <p>Janette Fraser</p> <p>Alan McCubbin</p> <p>Diane Fraser</p> <p>Steven Kinninmonth - LoR</p> | <ol style="list-style-type: none"> 1. Business Case Development will be led by PSC Project Manager. 2. Action tracker maintained and distributed to the Core Group by PSC PM. 3. Development and compilation of the OBC and FBC. |
| Task Team 2 - Clinical | <p>David Dodds – Lead</p> <p>Jonathan Hicks</p> <p>Stephen Harrow</p> <p>Martin Glegg (Garry Currie)</p> | <p>Clinical and operational focus providing clinical support & opinion to the Core Group.</p> <p>Prepare Clinical Brief</p> <p>Provide update actions reports on a monthly basis.</p> |

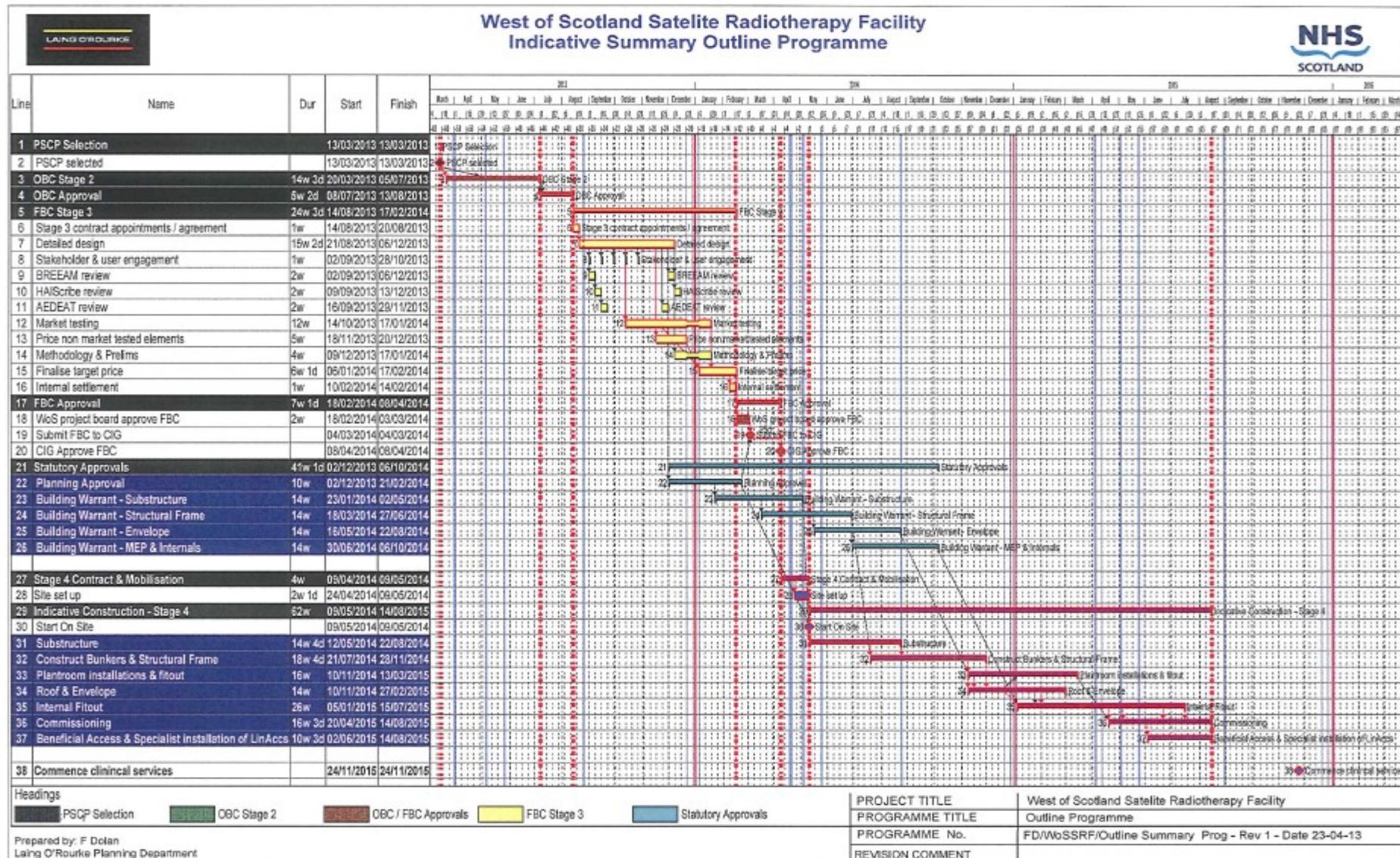
| | | |
|-------------------------|--|--|
| | <p>Suzanne Smith</p> <p>Martin Ford</p> <p>Helen Stewart</p> <p>Karen Moore</p> <p>Alice MacLeod</p> <p>Pauline McIlroy</p> <p>Ewen McDonald/Emma McLeod</p> <p>Suzanne Ginley</p> <p>Project Director – Diane Fraser (as necessary)</p> <p>PSC Project Manager – Jim Hackett (as necessary)</p> | |
| Task Team 3 - Technical | <p>Diane Fraser – Lead</p> <p>PSC Project Manager - Jim Hackett</p> <p>PSCP – Steven Kinninmonth / Peter Moran</p> <p>PSC Cost Advisor</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 |

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| | | <p>ensure successful delivery of Scheme Project during the various project stages.</p> <p>8. Focus on delivery and day-to-day management of the contract.</p> <p>9. Reviewing of programme, cost projections and ensure decisions are well founded.</p> <p>10. Reporting to Project Board via NHS Project Manager – raise any key risks to overall delivery e.g. cost / time.</p> |
| Task Team 4 – Finance | Alan McCubbin - Lead | <p>1. To provide a forum where progress on legal, cost and programme issues can be jointly monitored and where key issues can be discussed and decisions taken to fast track initiatives.</p> <p>2. To provide a focus for resolving issues and will meet monthly or on an ad-hoc basis as needed.</p> <p>3. Cost and change control reporting.</p> |
| Task Team 5 – IM&T | <p>Garry Currie – Lead</p> <p>Calum Morrison, NHS GG&C</p> <p>Stephen Nelson, NHS Forth Valley.</p> <p>Gavin Cox, NHS Lanarkshire</p> <p>Colin McGeechan, NHSGG&C</p> <p>Lindsay Stewart, NHSGG&C</p> | <p>1. To advise and determine the network requirements and IT infrastructure for the development</p> <p>2. Provide advise and feedback to the Core Group & Finance Team/Technical Team on options and costs</p> <p>3. To provide advice relating to building design around IT infrastructure (eg. server/node rooms) and cabling.</p> |
| Task Team 6 – Equipment & Commissioning | <p>Garry Currie – Lead</p> <p>PSCP – Chris Buchanan / Chris Morrison</p> | <p>1. Selection and procurement of all Group 2, 3 and 4 Equipment.</p> |

| | | |
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| | PSC Project Manager – Paul Fairie Commissioning Manager HFS Equipping Team / Host Board | 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 7 – Art Strategy | Jackie Sands PSCP – Peter Moran (Keppie Architects) | Development and integration of Art Strategy. |
| Design Team Meetings – As required | PSCP Design Team | Chaired and administered by the PSCP and shall address internal progress and design development. |
| Risk Reduction Meetings – As required following issue of Early Warning | NHS Project Manager PSC Project Manager PSCP Framework Manager Others as required | Arranged following receipt of an Early Warning, with the purpose being to consider the risk, seek solutions, agree actions and update the risk register. |
| NHS Ad-hoc Project Meetings | All relevant personnel | Forum to discuss any issues / actions from Task Team Meetings. Forum to discuss clinical impact as a result of design development. |

Appendix Nine

PSCP Programme



Appendix Ten

Communication Plan

| 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>Joint media release issued to local and national media on 6th February 2013</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 <ul style="list-style-type: none"> • 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>WOS NHS communication leads</p> <p>Staff reps</p> <p>Project Board and sub-group representatives</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 established</p> <p>Progress reports and updates shared by Board Cancer Groups, Cancer Leads and Regional Cancer Advisory</p> |

| | | | | | 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 | Ongoing - updates linked to key project milestones | WOS NHS communication leads | <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 media release 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 Staff Brief |
| 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 | <p>Initial update and media release emailed to WOS MSPs</p> <p>Proposals highlighted and retweeted via social media</p> |

| | | | | | |
|--|---|--|--|--|---|
| Scottish Government • 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 shared with SG Health Comms |
|--|---|--|--|--|---|

