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Golden Jubilee Foundation

Patients at the heart of progress

Hospital Expansion Programme

Phase Two - Expansion of Orthopaedic Surgery, General Surgery and Endoscopy

Outline Business Case

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Executive Summary

Introduction and Background

This Outline Business Case (OBC) sets out the strong case for investment in the expansion of elective surgical capacity, specifically Orthopaedic Surgery, General Surgery and Diagnostic Endoscopy for the West of Scotland Region between now and 2035.

This OBC follows on from the Initial Agreement (IA) approved by Scottish Government Capital Investment Group on 25th September 2018.

Updated Demand Modelling

Since developing the IA a much more detailed demand modelling exercise has been carried out by ISD with the purpose of:

- understanding the impact of the changing demographic structure within the West of Scotland Region on demand for orthopaedic, general surgery and endoscopy services
- providing population based activity projections for orthopaedics, general surgery and endoscopy within the West region between now and 2035
- identifying and assessing the potential options for provision of additional capacity orthopaedic , general surgery and endoscopy services at the NHS GJ (NHS Golden Jubilee) to support increasing demand within the West of Scotland between now and 2035

The demand modelling exercise has been developed using population only growth for endoscopy and population growth with a 5% tolerance for General surgery and population growth with a 10% tolerance for orthopaedic surgery.

Table One sets out the outputs of the demand modelling exercise – confirming the additional activity delivered by 2035 . Whilst **Table Two** sets out the specific clinical facilities to support the expansion of services.

Table One: Outputs of the Demand Modelling Exercise and Clinical Facilities Required to Support the Expansion

Specialty	Total Additional Activity delivered by 2035
Orthopaedic Surgery – See and Treat Service	**~ 4,118 procedures and ~9,467 additional new outpatient consultations and ~3,254 additional pre operative asessment appointments** Procedure breakdown as follows: • 1,318 Primary Knee Replacements • 1,187 Primary Hip Replacements • 305 Revision Arthroplasty Procedures • 457 Foot and Ankle Procedures • 846 Hand and Wrist Procedures
General Surgery - **Pre-operative Assessment and Treat Service**	**~1,748 additional General Surgery day case procedures and ~ 2,590 pre operative assessments at the NHS GJ** (serving current general surgery activity and forecast additional general surgery activity)
Diagnostic Endoscopy	**~ 7,600 Diagnostic Endoscopies**
All Specialties	**~13,466 additional Procedures** **~9,467 additional new outpatient consultations** **~5,844 additional pre operative assessments**

Table Two: Clinical Facilities Required to Support the Expansion

WoS Additional Projected Procedures at 5 Year Intervals	Baseline to 2020	2020-2025	2025-2030	2030-2035
Primary Hip Replacement	0.4	0.9	1.3	1.6
Primary Knee Replacement	0.5	1.0	1.4	1.8
Revision Arthroplasty Surgery	0.1	0.4	0.6	0.8
Hand and Wrist surgery	0.2	0.3	0.4	0.5
Foot and Ankle surgery	0.2	0.4	0.5	0.6
Summary of Orthopaedic Theatre Requirements	**1.4**	**3.0**	**4.2**	**5.3**
General Surgery	**0.7**	**1.4**	**1.9**	**2.0**
Summary of all Theatre Requirements	**2.1**	**4.4**	**6.1**	**7.3**
Proposed Build – No of Theatres	**5 new build orthopaedic theatres 2 refurbished general surgery theatres**			
Diagnostic Endoscopy	**0.9**	**1.7**	***2.2***	***2.8***
Therapeutic Endoscopy	0.3	0.6	*0.7*	*0.9*
Procedure Room Requirements	**1.2**	**2.3**	***2.9***	***3.7***
Proposed Build - No of Procedure rooms (Diagnostic capacity only)	**2 additional new build procedure rooms will be provided in recognition of the actions within the Endoscopy Action Plan published in March 2019**			

In addition to the theatre facilities outlined above the following additional facilities are required:

New Build Space:

- Additional Surgical Admissions and Recovery Area
- Expanded Central Sterile Processing Department
- Expanded theatre changing and storage facilities

Refurbishment Projects:

- Refurbishment of level 4 East Ward and Level 4 West Ward to provide additional orthopaedic inpatient beds and a small number of general surgery short stay beds
- Additional new outpatient clinic suite and pre operative assessment space
- Expansion of theatre recovery space to support the additional inpatient theatres
- Relocated Medical Physics department (currently located within the level 4 West ward)
- Expansion of Pharmacy Department to support additional demand
- Additional central staff changing facilities, and storage space for supplies and linen

The expansion of services will be delivered in a phase manner in line with the forecast demand. The workforce plan (and associated revenue costs) have been developed to support the phased expansion should there be a requirement to accelerate the phased opening there will be a requirement to bring forward the recruitment and training of staff in line with the accelerated delivery of activity. Further information is provided within section 9.2.

Further Service Improvement

A number of ongoing and future service improvements are outlined within section 2.13 of this OBC these will further enhance the patient experience and also further improve service efficiency.

Recruitment Training and Overall Workforce Plan

Working with the Hospital Expansion Programme Team the Senior Nursing Team and Heads of Departments have developed the overall workforce requirements for each staff group by financial year based on both the predicted activity each year identified through the demand modelling and the clinical model(s) of care.

The delivery of a sustainable workforce plan will be supported by the following approach:

- Ensuring recruitment of posts happens in a well managed, creative and timely way allowing time for induction and or further training
- Working in partnership with other WoS Health Boards to fill the difficult to fill positions. e.g. consultant general surgeon and consultant anaesthetist posts. Developing flexible, joint job plans, to further enhance the job plans of the existing hard to fill consultant posts within other Health Boards. (It is important to note that this is already established successful practice within ophthalmology between NHS GJ and NHS Forth Valley)
- Ensuring that we liaise with WoS training programme director to offer further training placements for junior doctors in training, supporting the next generation of consultants to be trained in a high volume elective service
- Ensuring there continues to be the appropriate nursing skill mix and numbers to support an excellent patient experience and efficiency of patient flow for 4 joint orthopaedic lists and high volume general surgery and endoscopy lists
- Building on the NHS GJ branded theatre nursing ‘Training Academy’ - speciality specific theatre nurse training will be established to support the training of band 3, 4 and 5 nursing staff ahead of each phased expansion. Given the limited number of experienced theatre staff and with significant number of theatre nursing vacancies across Scotland - this will be an essential part of our workforce plan to ensure the activity levels set out can be delivered year on year but also so that existing hospitals are not destabilised by the NHS GJ expansion

Case for Change

The IA provided a detailed list of the main issues causing the need for change through the OBC process this has been reaffirmed. In summary there is significant increase in the future service demand within orthopaedics general surgery and endoscopy between now and 2035 this is caused primarily by the forecast demographic changes. By 2035 it is forecast there will be a 35 % increase in the number of people aged over 60 living within the WoS region. This will place significant pressure on services and there will be a need for significant investment in elective care to meet the forecast increased demand.

Investment Objectives

The Investment Objectives in the IA for the Phase Two – orthopaedics, general surgery and endoscopy development have been reviewed and remain the unchanged. This is outlined in section 3.1. The strategic context and scope of the Project is unchanged since the IA was approved.

Short Listed Options

Section 4 of this OBC explains that in light of the confirmation in September 2018 from the Cabinet Secretary for Health and Sport the short listed options have been revisited and reframed to exclude repatriation of existing activity from the GJNH (see Appendix A2)

In addition as part of the OBC work, as described above the demand modelling work has been refreshed by ISD. This work has confirmed that the preferred option within the IA remains valid, with a requirement for five orthopaedic surgery theatres, two general surgery theatres and two additional endoscopy procedure rooms with supporting clinical and non clinical accommodation set out in **Table One** above.

Appraisal Results and the Identification of the Preferred Option

Option 3: refurbish existing NHS GJ facilities and create new build accommodation to provide all additional activity within orthopaedics, general surgery and diagnostic endoscopy has been identified as the preferred option. Option 3 achieved the highest benefit score scoring 851 out of a maximum score of 1000.

Both the development options (Options 2 and 3) scored significantly higher risk than option 1 the do minimum option. This is due to the significant construction works required when compared with option 1.

Option 3 demonstrates value for money by delivering the lowest NPV cost per benefit point.

Capital Costs

The OBC capital cost is £80,255,847, this includes optimism bias of 9.47 % and client contingency of 4.57%. The indicative capital costs within the IA were £80,119,493 there has been a non material increase in capital costs of £136,354 from IA to OBC. This minor movement in cost is primarily associated with construction costs.

Revenue Costs

The recurring revenue costs for the preferred option at Outline Business case (OBC) are £35,803,445 (excluding depreciation by 2035) as compared to the indicative revenue costs of £35,300,000 within the IA (which also excluded depreciation as this was not identified at that point due to phasing not yet known). This movement can be explained by 2 tears of the increased staffing costs as a result of the Scottish Government 3 year pay policy at circa 5.6% introduced from April 2018 in addition to the Scottish Government supported superannuation 6% increase implemented from April 2019.

Statement of Affordability

The capital funding (including equipment) for the elective centres is ring-fenced Waiting Time Improvement capital monies from the Scottish Government for the creation of a number of elective treatment facilities in Scotland.

Crucially the cost advisors, the in house project team and contractor have confirmed that the financial solution is value for money and this is further demonstrated within this economic analysis.

The revenue position for option 3 and associated Income analysis is summarised within Section 7.4.4 of this OBC. The revenue funding assumptions are in line with the existing funding model in place. The fixed costs (staffing and depreciation) are supported by Scottish Government and non-pay (marginal costs) supported by the WoS Boards on the marginal tariff Service level agreement basis and accessed from Scottish Government Investment to support delivery of the trajectories through the Waiting times Improvement plan.

Procurement Strategy & Contractual Arrangements

The project will be delivered in line with the guiding principles of the national Frameworks Scotland 2 Agreement which is managed by Health Facilities Scotland (HFS) on behalf of the Scottish Government Health Directorates.

The selection of the PSCP (Kier Construction) was approved by the Board in June 2017.

The agreed design information for the construction phase of the project can be found within the project Stage 2 Report, included within Appendix A14.

It is proposed that the facility will be delivered by Kier Construction under the Frameworks Scotland 2 Agreement, NEC 3 Engineering and Construction Contract Option C: Target Cost with Activity Schedule.

Confirming Stakeholder Support

To be inserted once formal engagement with stakeholders has taken place on 18th and 20th September

Project Management Arrangements

The project management structure remains the same as outlined within the IA. Figure 67and Figure 68 provide more detail on the overarching governance arrangements, specific governance arrangements and reporting structure for Phase 2.

Key Project Milestones

A detailed programme plan is set out in section 25. Table three below provides an overview of the key dates post OBC approval,

Table 3: Key Programme dates Post OBC Approval

Action	Date
CIG OBC Approval	**8th Oct 2019**
Design development, market testing and confirmation of costs	June 2019 – March 2020
FBC Submission to CIG	**17th April 2020**
CIG FBC Approval	**18th May 2020**
Instruction to progress to Construction Stage	26th May 2020
Construction commence	29th July 2020
Construction complete	**Phased completion commencing in December 2021**
Commissioning Period	**Completed in a phased way in line with the phased handover of the facility**

Workforce Planning

The project involves adding additional capacity to the existing service at the NHS GJ , it is important to note that the expansion is phased over a period of 15 years between 2020 and 2035. NHS GJ recognises that the key to success of the service expansion will be the development of a sustainable workforce plan that does not destabilise services within the existing hospitals within the West region. Section 2.14 sets out the proposed principles of the recruitment, training and workforce plan.

The preferred solution (option 3) requires 193.79 wte additional staff in the first year of opening - of which

105.55wte are additional nursing staff (bands 2, 3, 4, 5, 6, 7). By 2035 there is a requirement for 479.41 wte additional staff of which 265.66wte additional nursing staff bands (bands 2, 3, 4, 5, 6, 7),

The national shortage of experienced registered and unregistered nurses is well documented, in order to successfully deliver the additional capacity NHS GJ propose to:

- NHS GJ will create 36.23 wte training posts in 2020/21 up to 1 year ahead of opening, providing the opportunity to recruit and train over 50% of the required theatre nursing workforce from newly qualified nurses and HCSW to support them in achieving the theatre competencies ahead of opening in Dec 2021.

- from year one of opening onwards, NHS GJ plan to build on the already established NHS GJ branded theatre nurse 'Training Academy' approach, which has already successfully supported the many expansions in orthopaedic and ophthalmology theatre capacity, by further developing the Training Academy increasing the theatre nurse training posts

A summary of the workforce plan and profile is contained within Appendix A6.

Risk Management Plan

Two risk registers were developed during the initial stage of the project they have subsequently been regularly reviewed and updated

1. Programme Board Risk Register – Managed by the Programme Board, detailing the strategic Board level risks

2. Project Risk Register – Managed by the Project Manager, detailing the construction project specific risks.

Control measures and mitigation strategies have been identified for all project risks and have been implemented where possible.

Conclusion

The preferred option, **Option 3: refurbish existing NHS GJ facilities and create new build accommodation to provide all additional activity within orthopaedics, general surgery and diagnostic endoscopy**, offers the best investment to provide the required service going forward and fulfils all of the investment objectives identified in this OBC. These new facilities would provide a state of the art environment that would meet the needs and aspirations of both staff and patients within NHS GJ and the West Region.

Approval of this OBC will ensure that the project can move at pace towards the development of the Full Business Case for this critical project.

Strategic Case

1 Strategic Case: Overview

1.1 Introduction to the Outline Business Case

This section of the OBC reviews the strategic case developed within the IA, highlighting any changes since the IA was developed ensuring the case for change remains valid and the preferred solution.

	Strategic Case (OBC)	
	Question	**Response**
Strategic Case	Have the current arrangements changed?	Confirm details on (for example): • Proposed changes to service model. • Service activity changes. • Service provider & workforce changes. • Impact on Board's assets.
	Is the case for change still valid?	Summary confirmation of the: • Need for change. • Investment objectives.
	Is the choice of preferred strategic / service solution(s) still valid?	Confirmation of the preferred strategic / service solution(s).

2 Have the current arrangements changed?

	Question	Response
Strategic	Have the current arrangements changed?	Confirm details on (for example): • Proposed changes to service model. • Service activity changes. • Service provider & workforce changes. • Impact on Board's assets.

This section of the OBC outlines:

- the proposed service model
- the updated capacity plan to support the predicted demand for orthopaedic surgery, general surgery and endoscopy
- the proposed workforce model, highlighting key changes when compared with the existing orthopaedic, general surgery and endoscopy workforce model.

2.1 Current Service Provision at NHS GJ

Figure 1 provides an overview of the current Orthopaedic, General Surgery and Endoscopy activity undertaken at the NHS GJ. This includes recent expansions to support the delivery of Scottish Government's Waiting Times Improvement Plan published in October 2018.

Figure 1: Current Activity Including Planned Service Expansion

Specialty	Procedure	Activity @ start of 2018/19	Expansion in Dec 2018	Planned Expansion during 2019/20	Total Activity before Phase 2 Expansion
Orthopaedics	Arthroplasty	3803	n/a	200	**4003**
	Foot and Ankle	551	n/a	n/a	**550**
	Hand and	875	n/a	n/a	**300**

	Wrist				
	Ortho Minor	681	n/a	250	**931**
General Surgery	Day Case Surgery	880	200	n/a	**1080**
Endoscopy	Diagnostic Upper and Lower Endoscopy	1850	1200	n/a	**3050**

NHS GJ currently provides approx 50% of all WoS primary hip and knee replacements and over 23% of Scotland's total primary hip and knee replacements. Figure 2 provides an overview of how this will increase as activity increases between now and 2035.

Figure 2: Current and Future Forecast NHS GJ Total Primary Hip Replacements as a percentage of all Scotland and WoS Total Primary Hip Replacements

Total Primary Hip Replacements	Current Provision	2020 Projected	2025 Projected	2030 Projected	2035 Projected
West of Scotland	50.9%	54.8%	58.3%	61.0%	63.1%
Scotland Total	23.2%	23.0%	25.0%	26.6%	28.0%

Figure 3: Current and Future Forecast NHS GJ Total Primary Knee Replacements as a percentage of all Scotland and WoS Total Primary Knee Replacements

Total Primary Knee Replacements	Current Provision	2020 Projected	2025 Projected	2030 Projected	2035 Projected
West of Scotland	46.9%	51.4%	55.5%	58.5%	60.7%

Scotland Total	23.3%	23.7%	26.1%	28.1%	29.6%

Figure 2 and Figure 3 illustrate that:

- GJ currently provide over 50% of THR procedures and over 46% of TKR procedures within the West of Scotland region.
- by 2035 NHS GJ will provide 63% of all THR procedures and over 60% of all TKR procedures within the West of Scotland region
- Currently NHS GJ provide approx 23% of all THR and TKR within Scotland, this will increase to over 28% of all THR and TKR in Scotland by 2035

Since developing the IA the NHS GJ has expanded to support NHS Scotland Waiting Times Improvement Plan providing:

- 600 additional cataract procedures per annum (delivered by opening an additional day within the temporary mobile theatre)
- 200 additional orthopaedic procedures per annum delivered through undertaking more major joint activity on Saturdays
- 200 general surgery procedures per annum as a result of a reduction in plastic surgery activity
- 1200 diagnostic endoscopies per annum delivered by staffing the current procedure room an additional day a week

Figure 4 outlines the agreed levels of activity as part of each Health Boards 3 year rolling Service Level Agreement (SLA):

Figure 4: Summary of NHS GJ Orthopaedic, General Surgery and Endoscopy Capacity Allocations by Board 2019/20

	Referring NHS Board	New Outpatients	Procedures	Percentage of Health Boards Procedures delivered at NHS GJ
Orthopaedics	Greater Glasgow & Clyde	n/a	900	27%

	Forth Valley	1,202	697	21%
	Lothian	925	957	29%
	Fife	120	60	2%
	Dumfries & Galloway	371	230	7%
	Lanarkshire	n/a	135	5%
	Grampian	214	300	9%
	Total	**2,832**	**3,279**	**100%**

	Referring NHS Board	Procedures	Percentage of Health Boards Procedures delivered at NHS GJ
General Surgery	Greater Glasgow & Clyde	160	15%
	Forth Valley	180	17%
	Lothian	100	9%
	Fife	n/a	n/a
	Dumfries & Galloway	n/a	n/a
	Lanarkshire	500	46%
	Grampian	140	13%
	Total	**1,080**	**100%**

	Referring NHS Board	Procedures	Percentage of Health Boards Procedures delivered at NHS GJ
Endoscopy	Greater Glasgow & Clyde	1,270	42%
	Forth Valley	350	11%
	Lothian	n/a	n/a
	Fife	n/a	n/a
	Dumfries & Galloway	n/a	n/a
	Lanarkshire	1,430	47%
	Grampian	n/a	n/a
	Total	**3,050**	**100%**

There has been no change to the current physical accommodation, all orthopaedic and general surgery theatres and the endoscopy procedure room are located within the level 3 theatre suite, with outpatient and pre operative assessment services in two locations on level 1 of the hospital.

2.2 Demand Modelling – Update Following IA Work

2.2.1 Introduction and Background

Since developing the Initial Agreement a much more detailed demand modelling exercise has been carried out by ISD with the purpose of:

- understanding the impact of the changing demographic structure within the West of Scotland Region on demand for orthopaedic, general surgery and endoscopy services
- providing population based activity projections for orthopaedics, general surgery and endoscopy within the West region between now and 2035
- identifying and assessing the potential options for provision of additional capacity orthopaedic , general surgery and endoscopy services at the NHS GJ to support increasing demand within the West of Scotland between now and 2035

In addition work has been undertaken to understand population based activity projections for urology. Whilst this is not a service the NHS GJ currently provide or plan to provide in the future as a high volume surgical specialty, it is important that West regional trends and any future forecast pressures are fully understood when planning overall future elective surgical capacity for the region.

This section explores the impact of the changing demographic structure within the West of Scotland on demand, in particular, for surgical capacity. It focuses on primary hip replacements and revisions, other hip procedures, primary knee replacements and revisions and other knee procedures. In addition, it will consider shoulder and elbow, hand and wrist and foot and ankle procedures, general surgery procedures and diagnostic and therapeutic endoscopy procedures.

2.2.2 Assumptions for population based projections

The population of the West of Scotland is projected to change considerably over the coming years. This analysis explores the effect that this will have on the demand for orthopaedic surgery, general surgery and endoscopy.

Projections shown in this paper are based on specified assumptions about population and general surgery activity.

- Population projections will vary in line with Office for National Statistics (ONS) 2016 - based principal population projections for West of Scotland Region
- Activity rates (by 10 year age band) will vary in line with recent trends (3 year base-line, cy 2015-2017)

- The combined impact of previous factors behind activity rates continues to evolve in the same manner as the previous 3 years
- Given the significant rise in intervention rates and overall orthopaedic activity - for orthopaedics 10% tolerance limits have been added to this analysis. The aim is to model additional growth which occurs over and above the impact of age and the changing structure of the population. 10% upper tolerance is the equivalent of a 0.5% increase per annum until 2035
- Given general surgery and endoscopy intervention rates the overall activity growth has been slower than orthopaedics, population only growth has been planned for with no further growth in intervention rates
- The analysis for all specialties assumes no further increase in intervention rates. Should intervention rates continue to rise there would be a requirement for more surgical capacity within the region.

2.3 Orthopaedic Population Based Activity Projections – Hip and Knee Procedures

2.3.1 Hip and Knee Arthroplasty

Summary

- **An additional 1,187 primary hip replacements will be required by 2035 (includes a 10% tolerance)**
- **An additional 1,318 primary knee replacements will be required by 2035 (includes a 10% tolerance)**
- **No additionality for 'other' hip and knee revisions is being taken account of in this demand modelling**
- **307 revision procedures (hip and knee combined) are estimated to be required by 2035**

2.3.2 Primary Hip Replacements

The number of primary hip replacements carried out in the West of Scotland has increased markedly in the last 10 years. There were 2,415 in 2008 compared to 3,306 in 2017 (an increase of 37% within the 10 year period). Age-specific population based projections show that this increase is likely to continue, with a projected 3,956 by 2035 (or 4,531 based on the 10% upper tolerance limit).

Figure 5: Daycase and Elective Primary Hip Replacements; historical trends, baseline activity and population-based projections (with 10% tolerance)

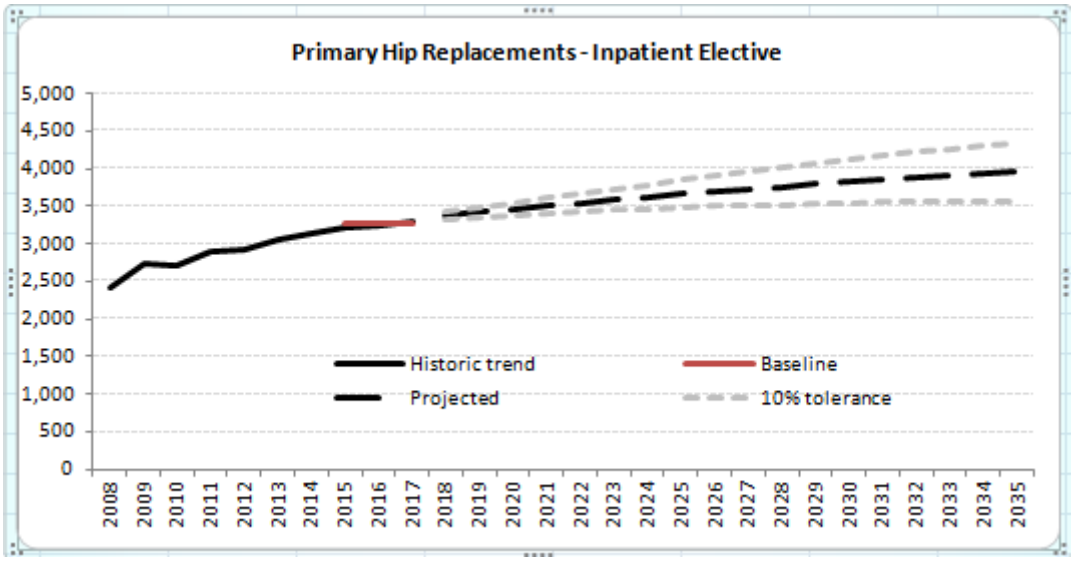


Figure 6 gives a breakdown of the projected increased demand in 5 year increments, applying an upper 10% tolerance limit to the population only forecasts identifies the need for 307 additional procedures by 2020 and another 327 by 2025. Between 2025 and 2030, the rate of increase in projected demand slows to an extent, with an additional 290 by 2030 and a further 263 by 2035.

Figure 6: Additional Projected Procedures at 5 Year Intervals

Activity type	Baseline to 2020	2020-2025	2025-2030	2030-2035
Inpatient Elective	195	204	160	128
Inpatient Non-Elective	18	19	18	16
Total	213	223	177	145
Cumulative Total population only	213	436	614	758
Cumulative Total Including upper 10% tolerance limit	**307**	**634**	**924**	**1,187**
Additional Theatre Capacity Required at each 5 year interval	**0.4**	**0.5**	**0.4**	**0.3**
Cumulative Theatre Requirements	**0.4**	**0.9**	**1.3**	**1.6**

2.3.3 Other Hip Procedures

In 2017 there were approximately 2,800 other hip procedures in the West of Scotland, 70% of which were unscheduled. The projected rise in this area has not been taken into account in this demand modelling as these are not procedures that are likely to be carried out at the GJNH. Moreover, it is anticipated that the boards will absorb this demand through improved clinical productivity.

2.3.4 Primary Knee Replacements

Figure 7 below shows that over the past 10 years there has been an increase in primary knee replacements (although to a lesser degree than primary hip replacements). In 2008, there were 3,114 primary knee replacements carried out in the West of Scotland Region, compared to 3,552 in 2017 (an increase of 14% in 10 years). Age-specific population projections suggest that this should continue to increase to 4,564 in 2035 (5,021 at 10% upper tolerance level).

Figure 7: Daycase and Elective Primary Hip Replacements; historical trends, baseline activity and population-based projections (with 10% tolerance)

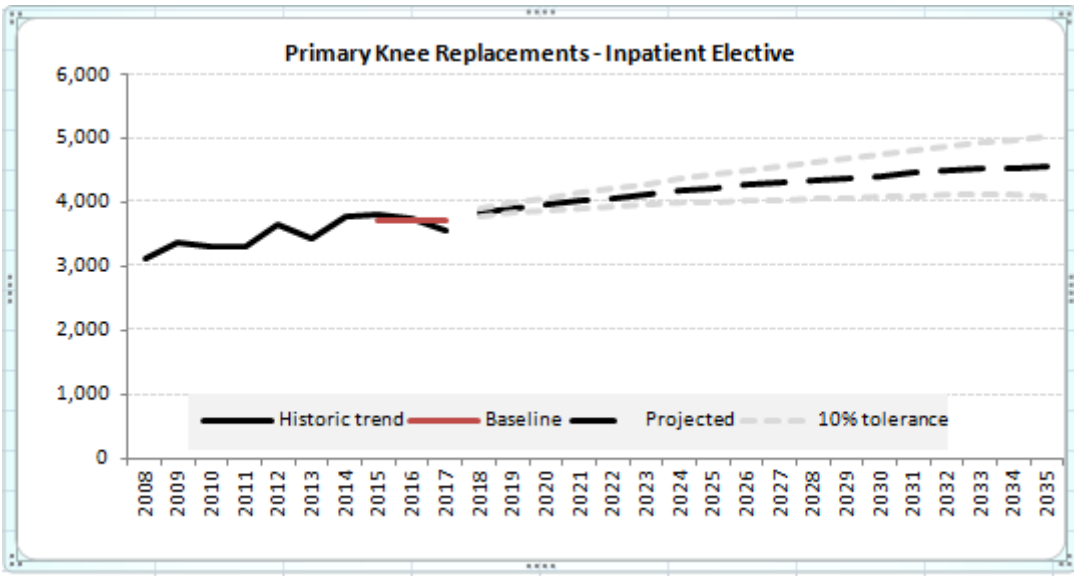


Figure 8 gives a breakdown of the projected increased demand in 5 year increments. It shows that an additional 249 procedures will be required by 2020, another 267 by 2025, another 197 by 2030 and a further 145 by 2035. In total, this leads to an increased projected demand of 858 primary knee replacements for the West of Scotland Region by 2035.

Figure 8: Additional Projected Procedures at 5 Year Intervals

Activity type	Baseline to 2020	2020-2025	2025-2030	2030-2035
Inpatient Elective	247	265	194	143
Inpatient Non-Elective	2	2	3	2
Total	249	267	197	145
Cumulative Total population only	249	516	713	858
Cumulative Total Including upper 10% tolerance limit	**349**	**729**	**1,047**	**1,318**
Additional Theatre Capacity Required at each 5 year interval	**0.5**	**0.5**	**0.4**	**0.4**
Cumulative Theatre Requirements	**0.5**	**1.0**	**1.4**	**1.8**

2.3.5 Other Knee Procedures

There were, on average, 3,600 other knee procedures carried out in the West of Scotland Region during the baseline period. 62% of these were carried out in a daycase setting. By 2035, given changes in practice and easier access to MRI, along with the impact of realistic medicine, the number of other knee procedures and specifically the number of knee arthrosopies has reduced significantly and therefore there is not likely to be any change in demand based on age-specific population projections. No additional capacity for 'other knee procedures' is required within the West region.

Figure 9: Additional Projected Procedures at 5 year intervals

Activity type	Baseline to 2020	2020-2025	2025-2030	2030-2035
Daycase	-9	-14	-20	-26
Inpatient Elective	10	5	-1	-5
Inpatient Non-Elective	15	16	19	16
Total	16	7	-2	-14
Cumulative Total	**16**	**23**	**21**	**7**

2.3.6 Hip and Knee Revisions

The demand for hip and knee revision procedures is related to the number of primary hip and knee replacements which are carried out in the preceding years. It is difficult to accurately project demand for revision procedures, since revision rates vary by board of treatment and future service

provision is potentially likely to involve some element of reconfiguration. In addition to this, revision rates are likely to be affected by improvement both in the service & surgical skills and in the implants being used. Figure 10 shows the most recent revision rates for hip and knee replacements, at a national level and at the NHS GJ[1]. The NHS GJ revision rate is significantly below the Scottish National revision rates.

Figure 10: Revision rates for hip and knee arthroplasty

Year	National Revision Rate (%)		GJNH Revision Rate (%)	
	HIP	**KNEE**	**HIP**	**KNEE**
within 1 year	0.89	0.59	0.63	0.33
within 3 years	1.2	1.65	0.47	1.52
within 5 years	1.91	2.24	1.14	1.04
within 7 years	2.28	2.94	-	-
within 10 years	3.50	3.50	-	-

A number of scenarios have been considered in order to understand the additional demand for revision procedures between now and 2035.

- Option 1 assumes that the current national rate will continue until 2035. On this basis, an additional 301 revision procedures will be required in the West of Scotland region
- Option 2 is based on the current GJNH rate (note that 7 and 10 year rates have been used since these are not available at board level). This suggests that an additional 154 revision procedures will be required by 2035
- Option 3 uses the GJNH rate with an improvement of 10%. On this basis, there will be a requirement for an additional 127 revision procedures by 2035
- Option 4 uses the national rate until 2025, and then an annual improvement on this rate until 2035. This suggests an additional 226 revision procedures by 2035. This is perhaps the most likely scenario if a high proportion of the additionality is transferred to the GJNH
- Option 5 uses the same approach as Option 4. An additional 10% has been included to account for revisions that occur beyond 10 years since the primary procedure. This suggests that there will be an additional 307 revision procedures by 2035. These additional revisions have been added incrementally across the time period in order to account for continuous improvement in the service

[1] Scottish Arthroplasty Project - https://www.arthro.scot.nhs.uk/

Figure 11: Additional Projected Procedures at 5 year intervals

Options	Baseline to 2020	2020-2025	2025-2030	2030-2035	Total Additional Revisions
Option 1 - National rate	144	64	51	42	**301**
Option 2 - GJNH rate	20	54	45	36	**154**
Option 3 - GJNH rate with 10% improvement	-38	57	58	50	**127**
Option 4 - National rate to 2025, then incremental improvement towards GJNH rate	144	64	14	4	**226**
Option 5 – Option 4 with an additional 10% to account for revisions occurring beyond 10 years since primary procedure	30	124	85	68	**307**
Cumulative Theatre Requirements	**0.1**	**0.4**	**0.6**	**0.8**	**0.8**

2.3.7 Other Orthopaedic Procedures

Summary

- **Projections show there will be a minimal increase in demand for shoulder and elbow procedures**
- **Hand and wrist procedure demand is projected to rise by 797 (including the upper 10% tolerance limit)**

2.3.8 Shoulder and Elbow Procedures

Figure 12 shows a peak in daycase and elective inpatient shoulder and elbow procedures in 2012 to 2,426. Since then, the number has started to decline. Using the baseline of 2015-2017, the number of shoulder and elbow procedures required is projected to increase marginally by 2035, with an additional 79 procedures required. When the upper tolerance limit of 10% is included, this increases to 337 additional procedures.

Figure 12: Daycase elective inpatient shoulder and elbow procedures; historical trends, baseline activity and population-based projections (with 10% tolerance)

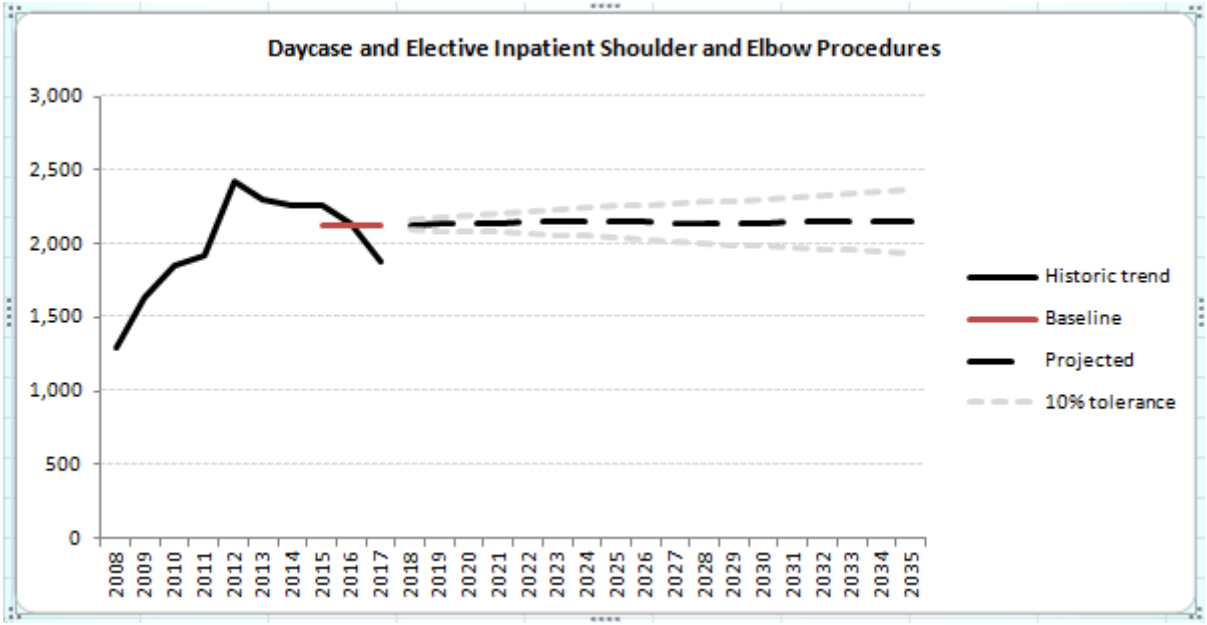


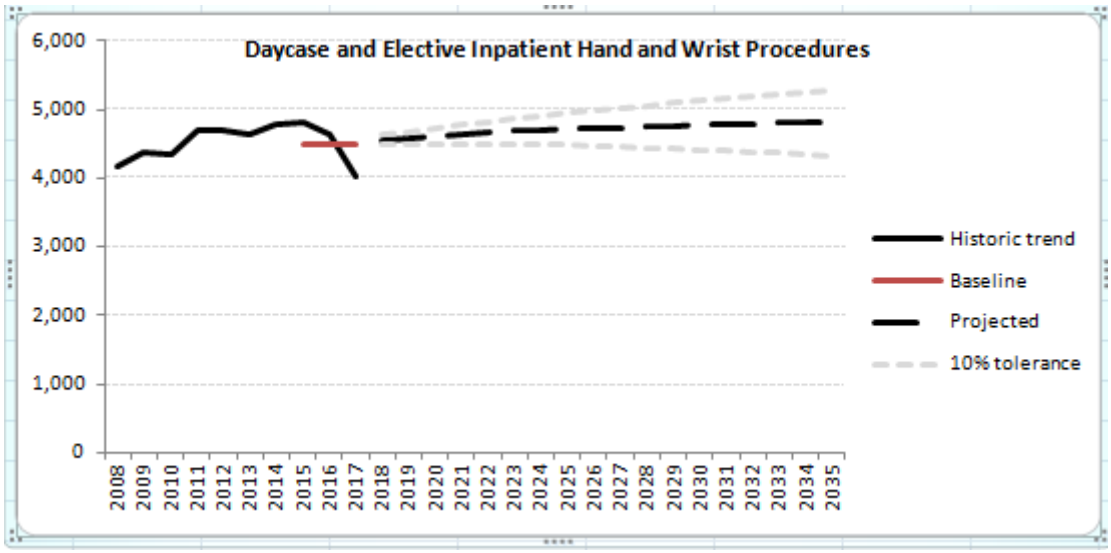
Figure 13: Additional Projected Procedures at 5 Year Intervals

Activity type	Baseline to 2020	2020-2025	2025-2030	2030-2035
Outpatients	0	0	0	0
Daycase	-3	-7	-13	-6
Inpatient Elective	21	17	9	12
Inpatient Non-Elective	10	12	14	11
Total	29	22	11	18
Cumulative Total	**29**	**51**	**61**	**79**

2.3.9 Hand and Wrist Procedures

Figure 14 shows that since 2015, the number of hand and wrist procedures being carried out in the West region has started to decline (from 4,799 in 2015 to 3,023 in 2017). Using age-specific population based projections, it is expected that there will be an increase in demand of 278 hand and wrist procedures by 2035.

Figure 14: Daycase and elective inpatient hand and wrist procedures; historical trends, baseline activity and population-based projections (with 10% tolerance)



The recent dip in activity in 2016 is as a result of a significant number of consultant vacancies (as a result of turnover and retrials) it is not thought to be a true trend of reduction in activity.

Figure 15 shows that the greatest proportion of these will be required by 2020, with gradually decreasing 5-year increments subsequently. When the 10% tolerance level is taken into account, the projected requirement could be 914 additional hand and wrist procedures.

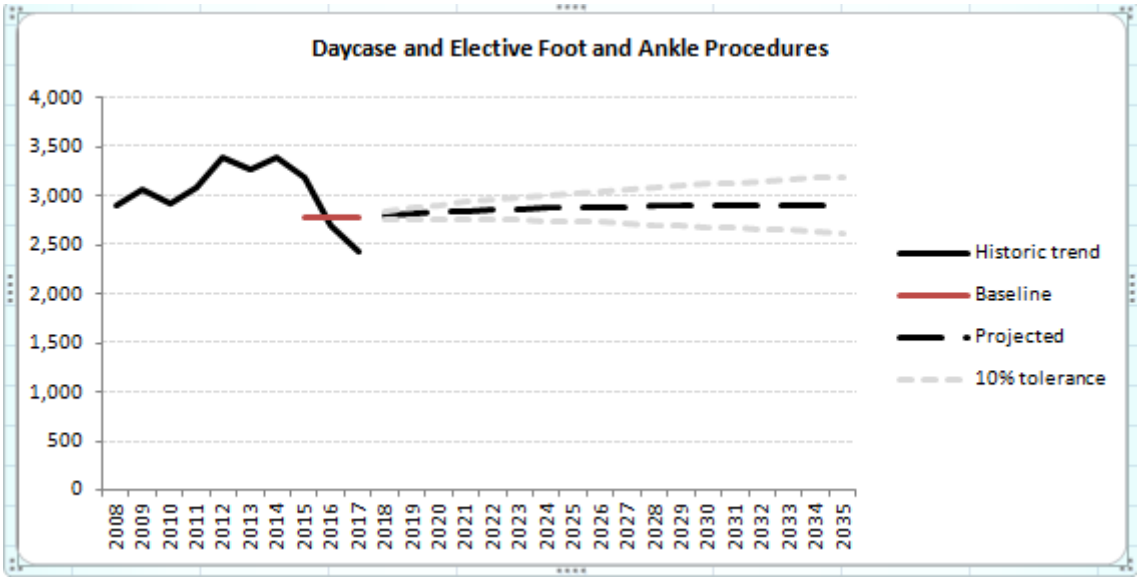
Figure 15: Additional Projected Procedures at 5 Year Intervals

Activity type	Baseline to 2020	2020-2025	2025-2030	2030-2035
Outpatients	0	0	0	0
Daycase	102	89	44	34
Inpatient Elective	16	17	11	6
Inpatient Non-Elective	5	-7	-5	-7
Total	123	99	49	33
Cumulative Total	**108**	**222**	**272**	**305**
10% tolerance	*(0-271)*	*(0-523)*	*(0-726)*	*(0-914)*
Additional Theatre Capacity Required at each 5 year interval	0.16	0.14	0.12	0.11
Cumulative Theatre Requirements	0.16	0.30	0.42	0.53

2.3.10 Foot and Ankle Procedures

Figure 16 shows a similar pattern to shoulder/elbow and hand/wrist procedures, in that there appears to have been a decline in the most recent years. In 2014 there were 3,395 foot and ankle procedures compared to 2,432 in 2017.

Figure 16: Daycase and elective foot and ankle procedures; historical trends, baseline activity and population-based projections (with 10% tolerance)



Using the baseline of 2015-2017, population projections indicate that there will be an additional 171 foot and ankle procedures required by 2035. When the 10% tolerance is taken into account, the additional demand increases to 512.

Figure 17: Additional Projected Procedures at 5 Year Intervals

Activity type	Baseline to 2020	2020-2025	2025-2030	2030-2035
Outpatients	0	0	0	0
Daycase	28	26	4	-2
Inpatient Elective	31	26	11	10
Inpatient Non-Elective	11	11	9	6
Total	70	63	25	14
Cumulative Total	**70**	**133**	**158**	**171**
10% tolerance	*(0-152)*	*(0-301)*	*(0-412)*	*(0-512)*
Additional Theatre Capacity	0.16	0.21	0.11	0.10

Required at each 5 year interval				
Cumulative Theatre Requirements	0.16	0.31	0.42	0.52

2.4 Summary of Theatre Requirements

Figure 18: Theatre Requirements

Procedure type	Baseline to 2020	2020-2025	2025-2030	2030-2035	Total
Primary Hips	0.4	0.5	0.4	0.3	**1.6**
Primary Knees	0.5	0.5	0.4	0.4	**1.8**
Hip and Knee Revisions	0.1	0.3	0.2	0.2	**0.8**
Hand and Wrist	0.2	0.1	0.1	0.1	**0.5**
Foot and Ankle	0.2	0.2	0.1	0.1	**0.6**
Additional Theatre Capacity at each 5 year interval	1.3	1.7	1.2	1.1	
Cumulative Theatre Requirements	**1.3**	**3.0**	**4.2**	**5.3**	

A full population only demand modelling exercise has now been completed for orthopaedic surgery as part of the OBC development. **Given the previous rises in intervention rates over and above population growth, a 10% tolerance has been applied to the population only growth figures, this has identified the need for 5.3 additional orthopaedic theatres by 2035. It is therefore proposed that 5 additional orthopaedic theatres are built within the phase 2 hospital expansion.**

The forecast additional procedures have been phased by financial year, this has helped the development of a detailed capacity plan and a recruitment, training and workforce plan.

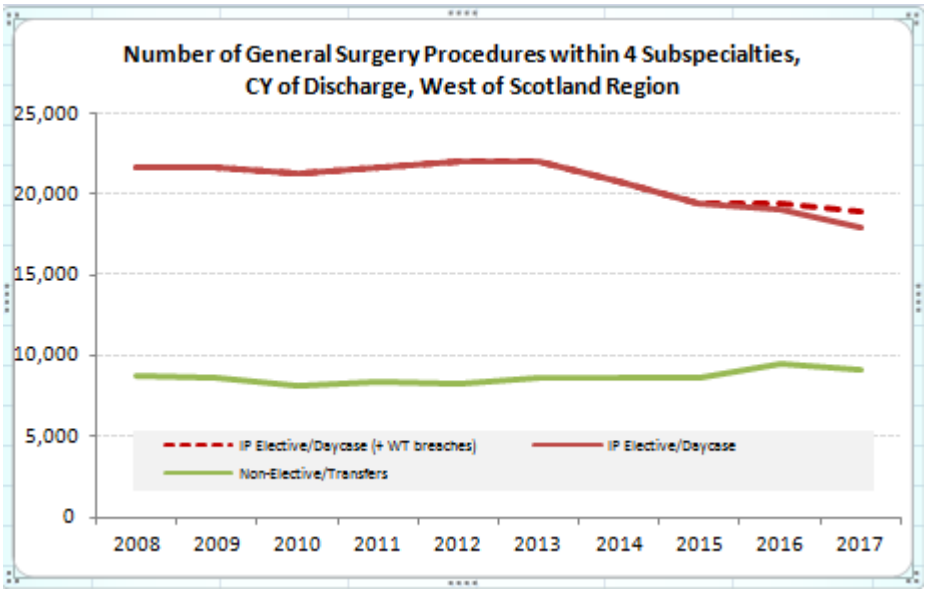
The forecast additional procedures have also been phased by Heath Board by financial year, this helps inform the likely future revenue costs on a Health Board by Health Board basis - see Appendix A1.

2.5 General Surgery, Endoscopy & Urology Population Based Activity Projections

2.5.1 Recent Activity Trends

To give context to the demand modelling forecasts for general surgery, it is helpful to first consider the recent activity trends within general surgery in the West of Scotland region.

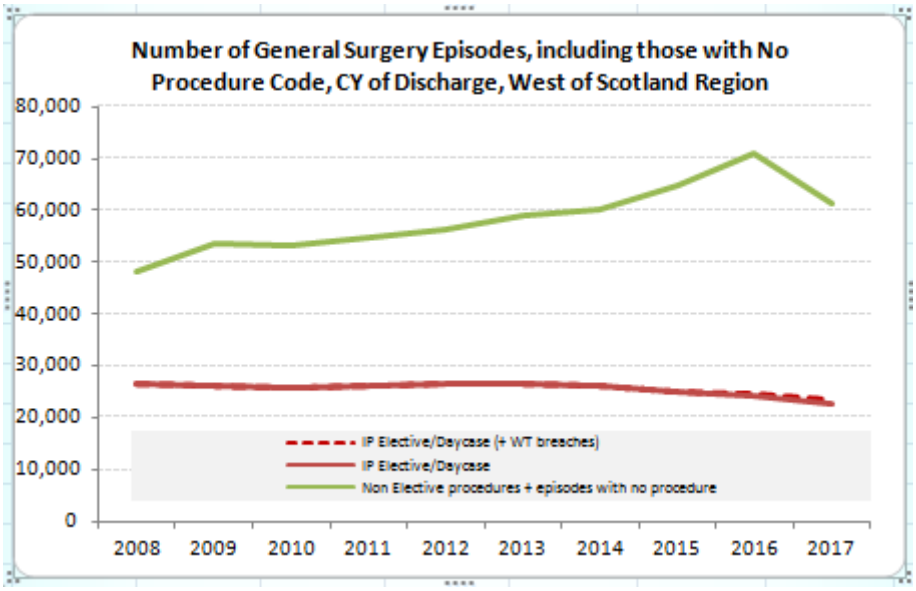
Figure 19: Number of General Surgery Procedures within 4 subspecialties, CY of Discharge, West of Scotland region



Over the last 10 years there has been a decline across the West of Scotland Region in the number of elective general surgery procedures which have been carried out. In 2008 there were 21,658 procedures, reducing to 17,983 in 2017 which can be seen in Figure 19. By 2016, however, the number of patients waiting more than 12 weeks for their elective procedure started to rise. During the same period, the number of non elective procedures increased marginally from 8,704 to 9,088.

As well as the above Figure 20 incorporates the number of general surgery episodes involving patients admitted as an emergency where no procedure took place. For example, this may be patients who were admitted and underwent investigative tests or observation, but who were ultimately discharged with antibiotics or for follow-up outpatient testing. There is a sharp rise in this activity across the time period, from 48,079 in 2008 to a high of 70,993 in 2016 and then a marginal reduction in 2017.

Figure 20: Number of General Surgery Episodes, including those with no procedure code, CY of discharge, West of Scotland Region



These data suggest that the recent decrease in elective general surgery can be explained, at least to an extent by:

- A marginal increase in the number of emergency general procedures (leading to additional pressure on the elective service)
- A notable increase in the number of patients being admitted in an emergency and not going on to have a procedure during the course of their episode (further pressure on the elective service)
- Overall there has been a reduction in the general surgery bed base in the region – some of this will be a result of the reconfiguration of hospitals and a reduction in length of stay for elective procedures. However there has been a significant increase in the number of emergency admissions within general surgery. In 2010 there were 45,000 emergency admissions with no procedure undertaken and in 2017 there were 52,152 emergency admissions with no procedure undertaken
- Significant work has been undertaken by hospitals to reduce length of stay for emergency admissions. Overall this has reduced the average length of stay from just over 4 days to just over 3 days. In 2017 there were 972 average available general surgery staffed beds within the region, of which 441 or 45% were used for patients admitted as an emergency who did not go onto have a general surgery procedure
- The overall increase in emergency general surgery admissions and procedures has led to increasing bed pressures, an increased likelihood of procedure or list cancellations on the day of surgery

- In response to the increase in emergency general surgery admissions and emergency procedures there has been a change in consultant working patterns whereby all elective activity is cancelled during on-call due to intensity of working when on call. In addition there is a decreased frequency of elective activity compared to non-elective in order to manage increased numbers of patient admitted as an emergency (i.e. 2 consultants on rota rather than 1)
- By 2015/16, an increase in the number of patients waiting more than 12 weeks for their procedure (indicating a lack of capacity to absorb the demand for general surgery elective procedures)
- A further consideration is that during 2015/16 there was a spike in the number of emergency admissions with no procedure – this is likely to be related to the reorganisation and scaling down of elective activity in advance of the opening of the Queen Elizabeth University Hospital in 2015
- It is also possible that increasing medical emergency admissions has negatively affected the capacity for elective general surgery in the region (this is out with the scope of this paper)

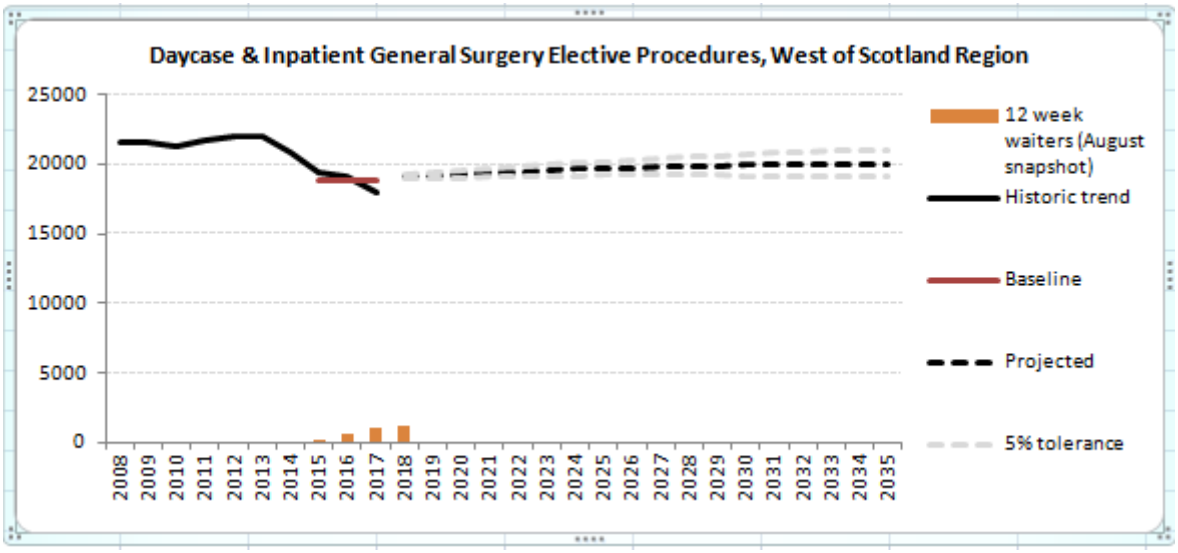
The considerable increase in the number of patients being admitted under general surgery as an emergency will also have significant impact on demand for diagnostics, both in an inpatient and outpatient setting e.g. endoscopy.

2.5.2 General Surgery – Summary of Population-based Projections

General Surgery – Summary of Requirements

- **Overall forecast increase for 1774 additional general surgery procedures by 2035 (239 day case, 982 inpatient elective and 554 inpatient non-elective procedures)**
- **It is estimated that at least 2 new theatres are required to meet this demand**
- **In addition to the above projected additional procedures – it is forecast that there may also be 7,409 additional general surgery non-elective inpatient episodes by 2035 when episodes with no procedure are included.**

Figure 21: Chart showing Daycase and Elective General Surgery procedures; historical trends, baseline and population-based projections (with 5% tolerance)



As suggested previously, the annual number of day case and elective inpatient procedures has decreased over the previous 10 years. The decrease in activity is not as a result of reduction in demand, but as a result of both changes to practice (with some procedures being undertaken when a patient is acutely unwell as opposed to discharging patients and treating them electively) and financial pressures which have led Boards to deliver less elective activity in an attempt to manage cost and deliver a balanced budget.

Age specific population-based projections, based on average activity in the most recent three years, have been calculated for activity within four general surgery subspecialties (breast, colorectal, upper GI and GS (Other). Figure 22 shows the total projected increase up until 2035. Information on the number of patients waiting more than 12 weeks for a general surgery procedure has also been included to demonstrate the increase in this cohort in recent years and the potential impact on activity in the baseline period had this demand been met. Figure 22 gives a breakdown of the projected increased demand in 5 year increments and suggests that 604 additional procedures will be required by 2020 and another 585 by 2025. Between 2025 and 2030, the rate of increase in projected demand slows to an extent, with an additional 382 by 2030 and a further 203 by 2035.

Figure 22: Additional Projected Procedures at 5 Year Intervals

Activity type	Baseline to 2020	2020-2025	2025-2030	2030-2035
Daycase	125	120	25	-32
Inpatient Elective	306	313	214	149
Inpatient Non-Elective	172	152	143	86
Total	604	585	382	203
Cumulative Total population only	**604**	**1,189**	**1,571**	**1,773**
5% tolerance	(247-961)	(460-1,917)	(464-2,678)	(287-3,260)
Additional Theatre Capacity Required at each 5 year interval – using population only growth	0.7	0.7	0.5	0.1
Cumulative Theatre Requirements – using population only growth	0.7	1.4	1.9	2.0

Figure 22 above identifies there is a requirement for 2 additional general surgery theatres by 2035.

2.6 Endoscopy – Summary of Population-based Projections

Endoscopy– Summary of Requirements

Diagnostic Endoscopy:

- **Projected increase of 4,980 planned diagnostic upper endoscopy procedures by 2035, plus 730 emergency diagnostic endoscopies**
- **Projected increase of 3,729 planned diagnostic lower endoscopy procedures by 2035, plus 229 in emergency diagnostic endoscopies**

Therapeutic Endoscopy:

- **Projected increase of 855 planned therapeutic upper endoscopy procedures by 2035, plus 458 emergency endoscopies**
- **Projected increase of 1,421 planned therapeutic lower endoscopy procedures by 2035, as well as 48 in an emergency**

Overall there is in excess of 12,400 additional endoscopy procedures forecast as required within the region between now and 2035. The impact of the Endoscopy Action Plan (March 2019) has been taken into account when determining the facility size and the true capacity needed for diagnostic endoscopy for the WoS region.

2.6.1 Diagnostic Endoscopy

Figure 23 below shows the recent increase in upper endoscopy (diagnostic) procedures within an outpatient, daycase or elective inpatient setting. This has risen from 31,000 in 2011 to 41,000 in 2017. Information on the number of patients waiting more than 6 weeks for an upper diagnostic endoscopy have also been included to demonstrate the increase in this cohort in recent years and the potential impact on activity had this demand been met. Projections based only on population change indicate that this will continue to rise, albeit at a slower rate. Figure 24 provides detail of the increased demand at five year intervals.

The increase in upper GI endoscopy is most likely as a result of increased awareness of the need for early diagnosis in UGI cancer and therefore a decreased threshold for referral for upper GI endoscopy. In addition the direct to test referral process has supported increasing ease of access to upper GI endoscopy.

Figure 23: Chart showing Outpatient, Daycase and Elective upper endoscopy (diagnostic) procedures; historical trends, baseline and population-based projections (with 5% tolerance)

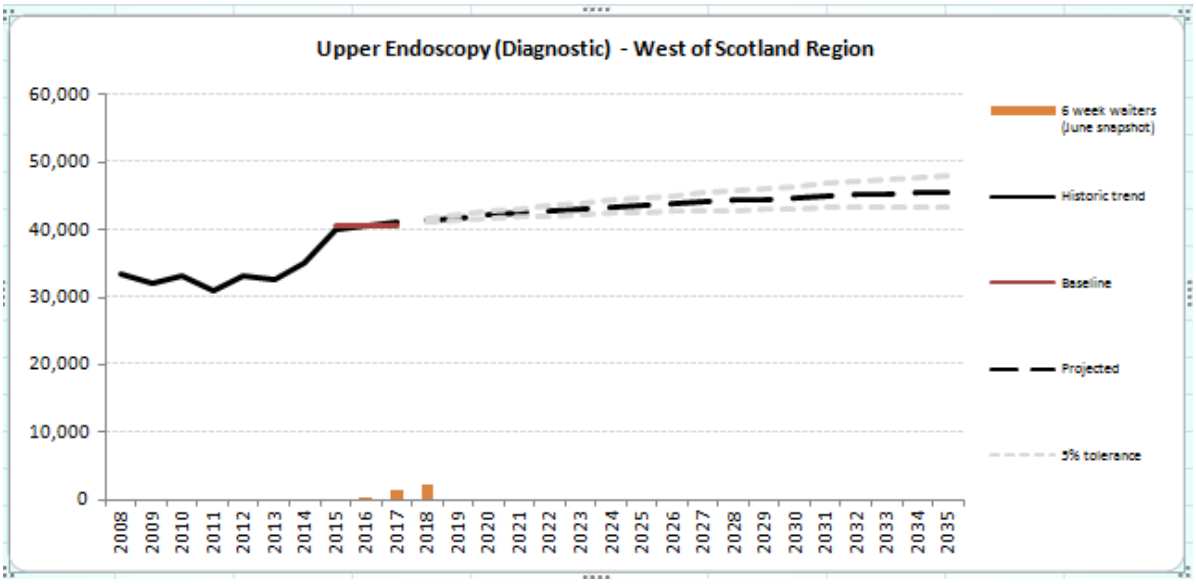


Figure 24: Projected demand for upper endoscopy (diagnostic) procedures in five year Intervals, including additional theatre capacity required

Activity type	Baseline to 2020	2020-2025	2025-2030	2030-2035
Outpatients	360	335	222	141
Daycase	1,068	1,095	882	717
Inpatient Elective	45	42	39	35

Inpatient Non-Elective	161	170	209	190
Total	1,634	1,642	1,351	1,083
Cumulative Total	**1,634**	**3,276**	**4,627**	**5,710**
5% tolerance	(1,060-2,209)	(1,883-4,467)	(2,503-6,464)	(2,917-8,214)
Additional Procedure room Capacity Required at each 5 year interval	0.4	0.3	0.2	0.3
Cumulative procedure room Requirements	0.4	0.7	0.9	1.2

Figure 24 above identifies there is a requirement for 1.2 additional procedure rooms for upper GI diagnostic endoscopy by 2035.

Figure 25 indicates that there has been a rise in the number of lower endoscopy (diagnostic) procedures between 2008 and 2017 (although this increase is less marked than for upper diagnostic procedures). This will continue to rise based on the population-based projections until 2035.

In contrast to upper GI endoscopy, patients referred for Colonoscopy are less likely to be sent for testing directly seeing a consultant in outpatients first. A significant number of patients will be referred with suspicion of cancer and will be listed for a lower GI endoscopy without review in outpatients. In addition, for patients aged over 75, there is an increasing use of CT colonography which has slowed the increase in demand for lower GI endoscopy.

Figure 25: Chart showing Outpatient, Daycase and Elective lower endoscopy (diagnostic) procedures; historical trends, baseline and population-based projections (with 5% tolerace)

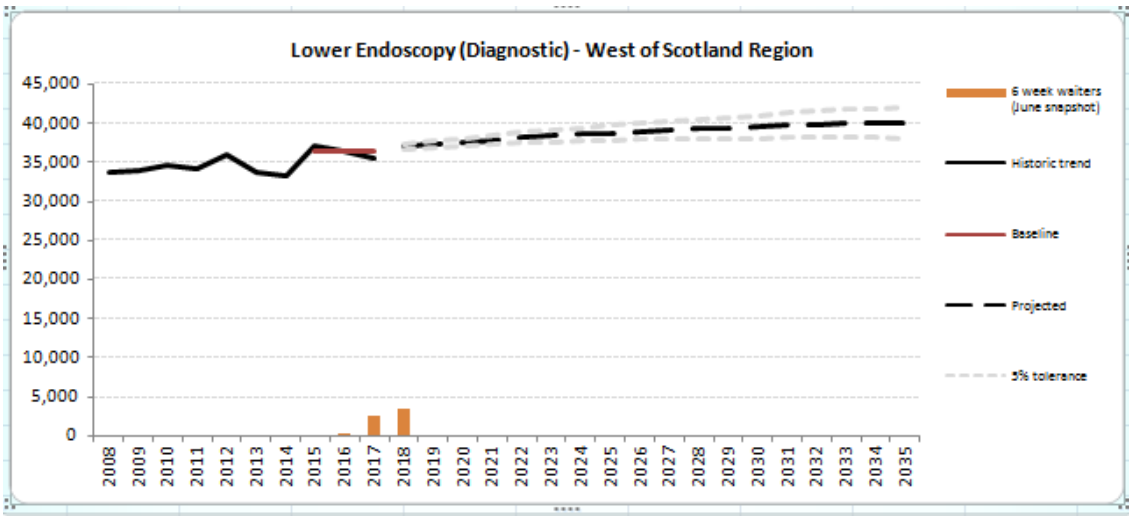


Figure 26: Additional Projected Lower Endoscopy Diagnostic Procedures at 5 Year Intervals

Activity type	Baseline to 2020	2020-2025	2025-2030	2030-2035
Outpatients	321	289	168	119
Daycase	845	855	532	374
Inpatient Elective	53	54	63	55
Inpatient Non-Elective	52	50	66	61
Total	1,271	1,248	828	609
Cumulative Total	**1,271**	**2,519**	**3,348**	**3,957**
5% tolerance	*(786-1757)*	*(732-3,521)*	*(1,814-4,882)*	*(1,881-6,033)*
Additional Procedure room Capacity Required at each 5 year interval	0.5	0.5	0.3	0.3
Cumulative procedure room Requirements	0.5	1.0	1.3	1.6

Figure 26 identifies there is a requirement for 1.6 additional procedure room for lower GI diagnostic endoscopy by 2035.

The impact of Qfit is not yet fully understood. The Qfit test is still being rolled out within the region. It is thought that when fully rolled out there will be a reduction in demand for colonoscopy, there is therefore likely to be a need of less than 1.6 endoscopy rooms for the region by 2035 – this will be taken into account when reviewing the potential service options.

2.6.2 Therapeutic Endoscopy

Figure 27 shows that there have been approximately 4,000 upper endoscopy (therapeutic) procedures carried out per annum in the west region. This number appears to have increased in the past three years.

Figure 27: Chart showing Outpatient, Daycase and Elective upper endoscopy (therapeutic) procedures; historical trends, baseline and population-based projections (with 5% tolerance)

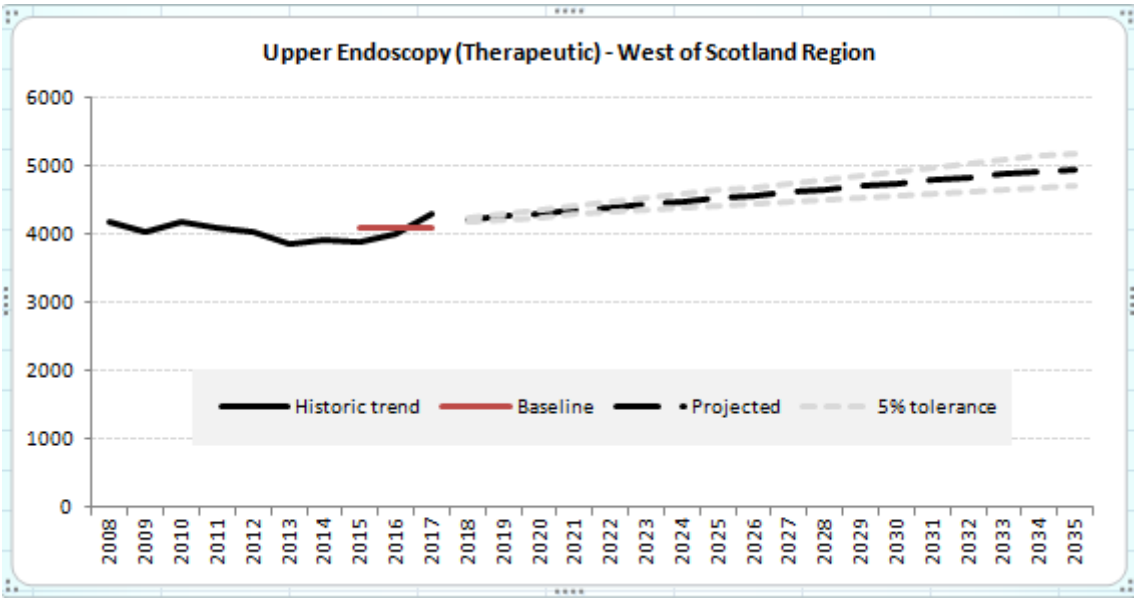


Figure 28: Additional Projected Upper Endoscopy Therapeutic Procedures at 5 years Intervals

Activity type	Baseline to 2020	2020-2025	2025-2030	2030-2035
Outpatients	21	20	17	12
Daycase	132	137	142	128
Inpatient Elective	61	64	65	56
Inpatient Non-Elective	101	108	131	117
Total	315	330	354	313
Cumulative Total	**315**	**645**	**999**	**1,313**
5% tolerance	*(235-396)*	*(476-814)*	*(733-1,266)*	*(942-1,684)*
Additional Procedure room Capacity Required at each 5 year interval	0.1	0.1	0	0.1
Cumulative procedure room requirements	0.1	0.2	0.2	0.3

Figure 28: Additional Projected Upper Endoscopy Therapeutic Procedures at 5 years Intervals

Figure 28 identifies there is a requirement for 0.3 additional procedure rooms for upper GI therapeutic endoscopy by 2035.

Figure 29 shows that the number of lower endoscopy (therapeutic) procedures has increased considerably in the past 10 years. Since 2013, the rate of increase has slowed, however this appears similar to the projected rate based on population changes alone.

Figure 29: Chart showing Outpatient, Daycase and Elective lower endoscopy (therapeutic) procedures; historical trends, baseline and population-based projections (with 5% tolerance)

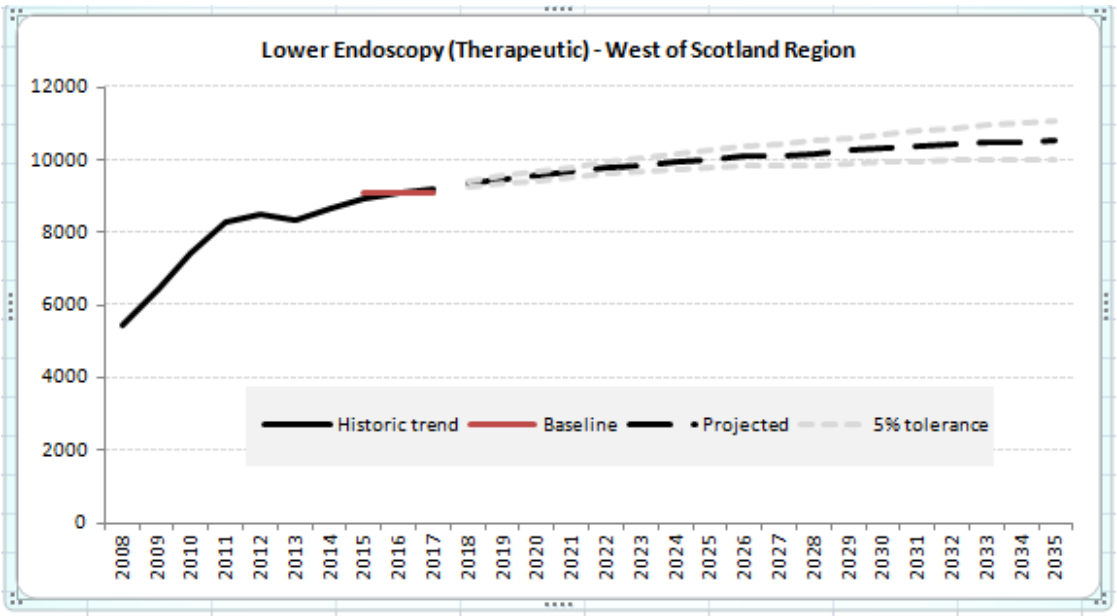


Figure 30: Additional Projected Lower Endoscopy Therapeutic Procedures at 5 Year Intervals

Activity type	Baseline to 2020	2020-2025	2025-2030	2030-2035
Outpatients	58	53	30	24
Daycase	377	393	232	168
Inpatient Elective	22	23	23	21

Inpatient Non-Elective	11	12	14	12
Total	466	480	298	225
Cumulative Total	**466**	**946**	**1,244**	**1,469**
5% tolerance	*(344-588)*	*(689-1,202)*	*(848-1,640)*	*(930-2,008)*
Additional Procedure room Capacity Required at each 5 year interval	0.2	0.2	0.1	0.1
Cumulative procedure room Requirements	0.2	0.4	*0.5*	0.6

Figure 29 identifies there is a requirement for 0.6 additional procedure rooms for lower GI Therapeutic endoscopy by 2035.

2.6.3 Summary of West Regional Endoscopy Requirements

In summary, population only growth within the region will drive the requirement for significant additional capacity by 2035, these figures are outlined below. In theory there is a need for 2.8 additional endoscopy rooms for diagnostic endoscopy and 0.9 rooms for therapeutic endoscopy.

Procedure Type	Number of additional procedures	Additional Procedure room Requirements
Upper GI - Diagnostic	5710	1.2
Lower GI Diagnostic	3957	1.6
Sub Total – Diagnostic Endoscopy	**9,667**	**2.8**
Upper GI - Therapeutic	1313	0.3
Lower GI - Therapeutic	1469	0.6
Sub Total – Therapeutic Endoscopy	**1462**	**0.9**
Total – All procedures	**11,129**	**3.7**

However it is important to note that the forecast figures do not model the potential impact of:

- The Endoscopy Action Plan published in March 2019, the pertinent recommendations include:
    - Embedding the Scottish Cancer Referral Guidelines for suspected cancer including reference to QFit use in urgent suspected cancer referral for colorectal cancer
    - the continued roll out of QFit testing in primary care, this may have the potential to reduce demand for lower GI diagnostic endoscopy by approx 20%
    - Roll out of QFit in secondary care to optimise patient choice and onward management – this has potential to reduce lists by 30 – 50%
    - the significant work done to develop clear clinical guidelines for management of surveillance patients with emphasis on 5 year surveillance, (which involves acting on audit of surveillance data capture and reducing surveillance intervals)
    - NHS Boards exploring new technology such as transnasal endoscopy and SCOTCAP (capsular endoscopy)
    - Continuation and expansion of non medical endoscopist training

Therefore taking these actions into account it is recommended that only 2 additional diagnostic endoscopy rooms are provided within the GJ expansion, this reflects the work of the Endoscopy Action Plan Group and the need to retain therapeutic endoscopy locally for patients to provide continuity of care.

As part of this business case funding to invest in nurse endocopist training has been identified and included – this will involve working with other WoS Health Boards to support the delivery of training.

Should transnasal endoscopy technology develop further to provide improved visability (at present it is understood visibility is limited by a fairly narrow biopsy channel) this would require to be explored and evaluated with WoS regional partners. The risks, benefits and costs of such a service (including the potential need for ENT cover) would need to be explored in full.

2.7 Urology – Summary of Population-based Projections

Urology – Summary of Requirements

- **Increase of 479 outpatient, 397 daycase, 463 inpatient elective and 117 inpatient non-elective urology procedures by 2035.**
- **Increase of 1,315 outpatient, 2,910 daycase, 883 inpatient elective and 119 inpatient non-elective cystoscopies by 2035.**
- **In addition to the above projected additional procedures – it is forecast that there may also be 800 additional urology non-elective inpatient episodes by 2035 when episodes with no procedure are included.**

Figure 31: Chart showing Outpatient, Daycase and inpatient elective urology procedures; historical trends, baseline and population-based projections (with 5% tolerance)

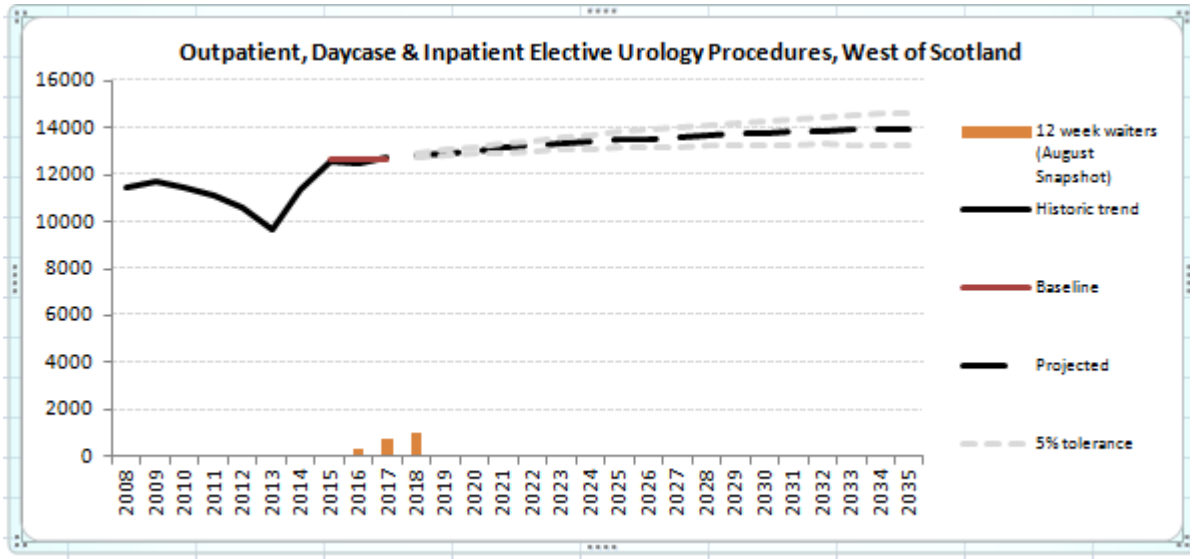


Figure 31 suggests that there has been an increase in the number of urology procedures over the last 10 years. Information on the number of patients waiting more than 12 weeks for a urological procedure have also been included to demonstrate the increase in this cohort in recent years and the potential impact on activity had this demand been met. (Please note that the dip in 2013 activity can be attributed to outpatient procedure data – the ISD Data Management Team is currently exploring potential causes for this).

Figure 32: Additional Projected Procedures at 5 Year Intervals

Activity type	Baseline to 2020	2020-2025	2025-2030	2030-2035
Outpatients	131	147	127	74
Daycase	141	139	82	35
Inpatient Elective	144	150	102	67
Inpatient Non-Elective	34	31	29	24
Total	450	467	339	201

Cumulative Total	**450**	**917**	**1,255**	**1,456**
5% tolerance	*(270-630)*	*(545-1,288)*	*(686-1,825)*	*(686-2,226)*
Additional Theatre Capacity Required at each 5 year interval	0.4	0.4	0.3	0.2
Cumulative Theatre Requirements	0.4	0.8	1.1	1.3

Figure 32 shows that there is an anticipated increase of 1,456 urology procedures by 2035. This leads to a requirement for 1.3 additional procedure rooms for urology within this time frame.

Figure 33: Chart showing outpatient, daycase and elective inpatient procedures for cystoscopy; historical trends, baseline and population-based projections (with 5% tolerance)

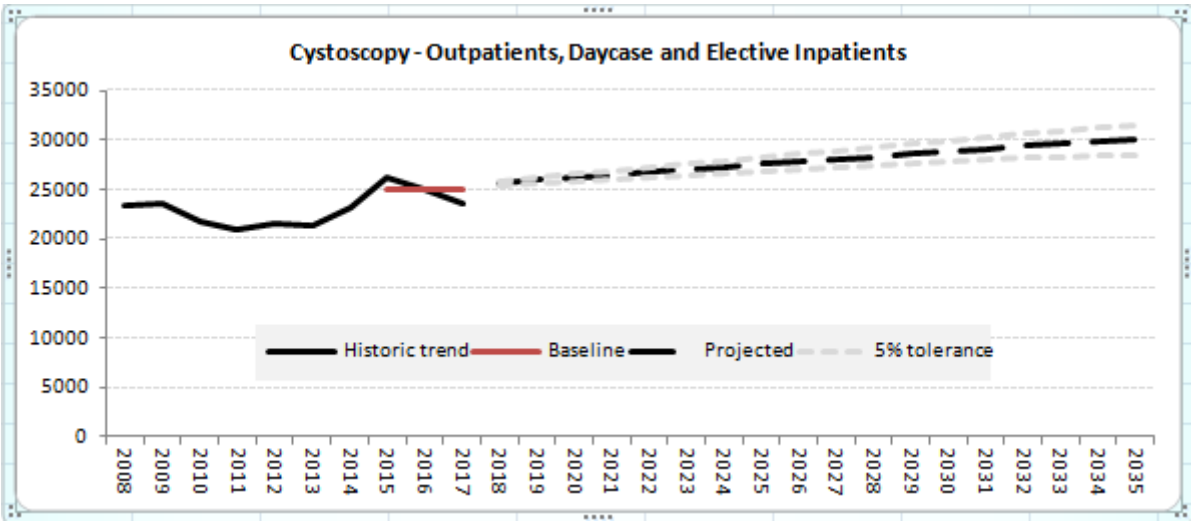


Figure 34: Additional Projected Procedures at 5 Year Intervals

Activity type	Baseline to 2020	2020-2025	2025-2030	2030-2035
Outpatients	369	346	329	271
Daycase	716	750	760	684
Inpatient Elective	210	221	241	210
Inpatient Non-Elective	26	28	34	30

Total	1,321	1,346	1,364	1,195
Cumulative Total	**1,321**	**2,667**	**4,031**	**5,227**
5% tolerance	*(988-1,655)*	*(1,966-3,368)*	*(2,929-5,134)*	*(3,697-6,757)*
Additional Procedure Room Capacity Required at each 5 year interval	0.3	0.3	0.2	0.2
Cumulative Procedure Room Requirements	0.3	0.6	0.8	1.0

Figure 34: Additional Projected Procedures at 5 Year Intervals

Figure 34 identifies there is a requirement for 1 additional procedure rooms for cystoscopy by 2035.
In summary there is a forecast need for one additional procedure room and 1.3 theatres to support the forecast additional WoS demand for cystoscopy (between 3.6k and 6.7k procedures) and Urology procedures (between 600 and 2236 procedures) by 2035.

The WoS region has been working towards implementation of a regional strategy for urology with each health board offering routine urological procedures, with centralisation of the more specialist procedures. Given the forecast increased demand is not as significant as in the other surgical specialties it has been agreed that this will be supported through the implementation of the regional strategy. Therefore urology procedures and cystoscopy procedures will not provided as part of the NHS GJ phase 2 expansion but will be supported through the implementation of the regional urology plan.

2.8 Facilities required to meet the forecast WoS Demand Modelling Work

Figure 35 summarises the theatre and procedure room requirements from 2020 to 2035, based on the forecast WoS Demand. It is important to note that the following:

- five new build orthopaedic theatres will be built (forecast demand predicts need for 5.3 theatres by 2035) as part of the phase 2 new build
- two additional general surgery theatres (with additional supporting theatre recovery space) will be refurbished and commissioned as part of the phase 2 refurbishment programme

(forecast demand predicts the need for 2.0 theatres by 2035). Currently these theatres are used for the NHS GJ cataract programme and do not access theatre recovery. These theatres and additional supporting theatre recovery space will be available for use by October/ November 2020

- 2 additional endoscopy procedure rooms will be built to meet the forecast demand for diagnostic endoscopy between now and 2035 (this is less than the 2.8 forecast due to the impact of the National Endoscopy Action Plan – see section 2.6.3)

Figure 35: Summary of Cumulative theatre and procedure room requirements from 2020 to 2035

WoS Additional Projected Procedures at 5 Year Intervals	Baseline to 2020	2020-2025	2025-2030	2030-2035
Primary Hip Replacement	0.4	0.9	1.3	1.6
Primary Knee Replacement	0.5	1.0	1.4	1.8
Revision Arthroplasty Surgery	0.1	0.4	0.6	0.8
Hand and Wrist surgery	0.2	0.3	0.4	0.5
Foot and Ankle surgery	0.2	0.4	0.5	0.6
Summary of Orthopaedic Theatre Requirements	**1.4**	**3.0**	**4.2**	**5.3**
General Surgery	**0.7**	**1.4**	**1.9**	**2.0**
Summary of all Theatre Requirements	**2.1**	**4.4**	**6.1**	**7.3**
Proposed Build – No of Theatres	**5 new build orthopaedic theatres 2 refurbished general surgery theatres (available once new Eye Centre opens)**			
Diagnostic Endoscopy [note 1]	**0.9**	**1.7**	***2.2***	***2.8***
Therapeutic Endoscopy [note 2]	0.3	0.6	*0.7*	*0.9*
Procedure Room Requirements	**1.2**	**2.3**	***2.9***	***3.7***
Proposed Build - No of Procedure rooms	**Diagnostic capacity only – 2 additional new build procedure rooms will be provided. This is in recognition of the actions within the endoscopy action plan published in March 2019**			

Note 1 – only 2 diagnostic endoscopy rooms are required – in line with the various actions within the

Endoscopy Action Plan – see section 2.6.3 for more detail)

Note 2 - discussion within the WoS engagement group have confirmed that Local Health Boards will managed demand for therapeutic endoscopy this will ensure continuity of care for patients

2.9 Current waiting time backlog(s)

Figure 36 provides a summary of the current waiting time position within the WoS region and Scotland for orthopaedics, general surgery and Endoscopy. As at June 2019 within the WoS region there were 5,918 patients waiting longer than 12 weeks for surgery and 3,791 patients waiting longer than 6 weeks for a diagnostic endoscopy. In addition there are 6098 patients waiting longer than 12 weeks for their new outpatient consultation. When compared to the waiting time data of March 2018 included within the IA, there has been a small reduction in the number of patients waiting longer than 12 weeks for general surgery, and an improvement in the number of patients waiting longer than 6 weeks for endoscopy, however there continues to be growing waiting time pressure in orthopaedics with similar numbers of patients still waiting longer than 12 weeks for their surgery. As illustrated in Figure 37 the delivery of the 62 day cancer waiting time target continues to be challenging for most WoS Health Boards to consistently achieve.

The Scottish Government waiting time improvement plan will support the further reduction in waiting times for patients within the next 18 – 24 months ahead of the opening of the phase 2 facility at NHS GJ, in addition once open the NHS GJ facility will provide the necessary additional capacity per annum to meet the forecast additional patient demand as a result of further demographic change.

Figure 36: Patients Waiting Longer than Scottish Government Waiting Time Guarantee Targets as at 3rd June 2019 (Source ISD)

Orthopaedics	OP > 12 weeks	OP > 26 weeks	TTG > 12 weeks	TTG > 26 weeks
NHS GGC	2913	799	3457	1236
NHS Lan	801	69	401	94
NHS A&A	427	36	450	91
NHS FV	495	34	542	205
NHS D&G	84	8	62	2
Total - WoS	**4720**	**946**	**4912**	**1628**
Total - Scotland	**11001**	**2508**	**7657**	**2445**
General Surgery	**OP > 12 weeks**	**OP > 26 weeks**	**TTG > 12 weeks**	**TTG > 26 weeks**
NHS GGC	2323	367	416	70
NHS Lan	0	0	276	46

NHS A&A	640	13	85	26
NHS FV	252	33	223	55
NHS D&G	26	1	6	0
Total - WoS	**3241**	**414**	**1006**	**197**
Total - Scotland	**6098**	**1052**	**3668**	**1529**
WoS - Orthopaedics & General Surgery Total	**7961**	**1360**	**5918**	**1825**

Diagnostic Endoscopy	>6 weeks
NHS GGC	2670
NHS Lan	0
NHS A&A	1087
NHS FV	31
NHS D&G	3
Total - WoS	**3791**

Figure 37: Cancer waiting time – WoS and Scotland position against 62 day cancer pathway as at April 2019

62 Jun-19		NHS Board						
		AA	DG	FV	Gr	GGC	La	Scot
Cancer Type	Br	30/34 88.2%	6/6 100.0%	10/10 100.0%	33/33 100.0%	95/105 90.5%	19/19 100.0%	303/323 93.8%
	Cx	0/0 -	0/1 0.0%	0/0 -	1/3 33.3%	3/4 75.0%	1/2 50.0%	14/21 66.7%
	Colo	7/13 53.8%	7/9 77.8%	4/6 66.7%	6/12 50.0%	25/45 55.6%	19/19 100.0%	111/167 66.5%
	H&N	0/1 0.0%	0/0 -	5/5 100.0%	1/3 33.3%	15/20 75.0%	5/5 100.0%	39/48 81.3%
	Lung	13/14 92.9%	1/2 50.0%	10/13 76.9%	21/24 87.5%	40/56 71.4%	26/27 96.3%	168/198 84.8%
	Lym	3/3 100.0%	1/1 100.0%	3/3 100.0%	0/1 0.0%	9/10 90.0%	0/0 -	25/29 86.2%
	Mel	2/3 66.7%	2/2 100.0%	2/3 66.7%	1/2 50.0%	14/14 100.0%	9/9 100.0%	48/54 88.9%
	Ov	3/3 100.0%	1/1 100.0%	0/0 -	1/1 100.0%	3/7 42.9%	5/6 83.3%	18/25 72.0%
	UGI	5/8 62.5%	5/5 100.0%	7/7 100.0%	18/18 100.0%	27/31 87.1%	9/9 100.0%	114/122 93.4%
	Urol	11/11 100.0%	4/5 80.0%	9/10 90.0%	20/27 74.1%	44/67 65.7%	8/9 88.9%	132/190 69.5%
	All	74/90 82.2%	27/32 84.4%	50/57 87.7%	102/124 82.3%	275/359 76.6%	101/105 96.2%	972/1177 82.6%

2.10 Summary of predicted Elective Requirements for the West Region Between now and 2035

Not all of the forecast additional elective activity required to support the West region population will be provided through the expansion of the NHS GJ. It has been assumed that:

- WoS Health Boards will manage and recover the current waiting time backlog position – no allowance has been made to support the current waiting time backlog position within Orthopaedics, General surgery or endoscopy. The recovery of the current waiting time position will be delivered through the Scottish Government Waiting Times Improvement Plan
- Any future service improvements made within existing WoS hospitals (e.g. through increasing theatre utilisation, reducing length of stay etc) will support overall hospital wide pressures and /or support the delivery of additional elective demand in other surgical specialties pressures and / or support any potential increases in surgical intervention rates (that have not been accounted for within the demand modelling of this OBC)
- The forecast additional urology activity will be provided through the implementation of the regionalisation of the urology service within the West. Significant work has already been undertaken within the regional planning forum to move towards a regionalised urology service
- the NHS GJ expansion will only provide a diagnostic endoscopy service to support ~7,600 more endoscopies (less than forecast due to the impact of the Endoscopy Action Plan) , with WoS Health Boards supporting the delivery of therapeutic endoscopy through implementing the changes outlined within the Endoscopy Action Plan
- No allowance has been made for supporting the East or North Regional growth in demand between now and 2035. It is assumed that the North and East Elective Treatment Centres will be commissioned in time to support the growth in demand within the North and East regions within surgical services

Figure 38 provides a summary of what will be delivered within the phase 2 Expansion to meet WoS Demand.

Figure 38: Additional Activity Delivered by the Phase 2 Expansion

Specialty	Additional Activity
Orthopaedic Surgery – See and Treat	**~ 4,118 procedures and ~9,467 additional new outpatient consultations and ~3,254 additional pre operative asessment appointments** Procedure breakdown as follows: • 1,318 Primary Knee Replacements • 1,187 Primary Hip Replacements • 305 Revision Arthroplasty Procedures • 457 Foot and Ankle Procedures • 846 Hand and Wrist Procedures
General Surgery - **Pre operative Assessment and Treat Service**	**~1,748 additional General Surgery day case procedures and ~ 2,590 pre operative assessments at the NHS GJ** (serving current general surgery activity and forecast additional general surgery activity)
Diagnostic Endoscopy	**~ 7,695 Diagnostic Endoscopies**
All Specialties	**~13,561 additional Procedures** **~9,467 additional new outpatient consultations** **~5,844 additional pre operative assessments**

2.11 Facilities that will be provided within NHS GJ to support the phase 2 expansion

In order to support the delivery of the additional activity set out in section 2.9 the following facilities will be provided both and new build and refurbishment projects to make best use of the estate and deliver good clinical flow and adjacencies:

New Build Facilities:
• Level 1 – entrance area for surgical admissions, new expanded Central Sterile Processing Department (CSPD) • Level 2 – surgical admissions and recovery unit (SARU), Endoscopy Unit • Level 3 - 5 new ultra clean air orthopaedic theatres and associated accommodation (consumables, instrument storage etc, staff change etc.)

The new build facility will have strategic links to the existing hospital as follows:

- Level 1 – one main centrally located staff link into the existing hospital
- Levels 2 and 3 - one main centrally located link, with two further links using the existing stairwell areas

Refurbishment and Reconfiguration of Existing Facilities:

In addition certain areas within the existing hospital will be reconfigured and or refurbished to support the throughput of significant additional activity, this will be split into three key phases as follows:

Stage 1: (delivered by Oct 2020:)

- 2 additional general surgery theatres (using the 2 existing ophthalmology theatres within main theatre suite) – opened in a phased manner in line with demand
- Stage 1 (of the 2 stage) expansion of theatre pre op and recovery area will be enlarged and reconfigured to accommodate more space for patients pre and post surgery

Stage 2: (delivered by Dec 2021)

- Additional outpatient and pre-operative assessment facilities through the refurbishment of 2 office wings on level 1
- Stage 2 of the two stage expansion of theatre pre op and recovery area
- Making good of areas that are affected by the break through – these areas include Estates offices, radiology offices, clinical governance dept and theatre departments
- Theatre daily storage area will be enlarged to deal with additional volume of daily supplies transferred daily from stores to the theatre dept
- Theatre administration - team lead clinical base, theatre services manager and theatre administrator offices will be displaced as a result of expansion - they will be re-provided within the current ophthalmology and endoscopy admission / waiting area
- Refurbishment of Ward 4 East to provide 36 additional inpatient ward beds
- Refurbishment of existing medical records space to accommodate a new pharmacy dispensary and distribution area (space will be freed up as a result of the implementation of the Electronic Patient Record Programme (EPR))

Stage 3: (delivered by 2022/23)

- Refurbishment of Ward 4 West to create a further 36 additional inpatient ward beds (including additional enhanced monitoring beds).

- Refurbishment of the previous CSPD accommodation on level 1 to provide accommodation for medical physics dept (currently occupying the new orthopaedic ward area), expansion of central staff changing facilities, provision of additional space for stores / materials

2.12 Description of the Services and Facilities Provided

In developing the service needs significant discussion and engagement has taken place with the West of Scotland Health Board planning leads in the last 2.5 years. Following on from the demand modelling work undertaken further discussions were held to define and confirm the proposed service offering at the NHS GJ to support the WoS population between now and 2035. The outputs of the model are set out below:

All Services	**By 2035 the expansion of elective care at the GJNH will provide the following additional capacity within the WoS:** - **13,561 additional patient procedures** - **9,467 new outpatient appointments** - **6,037 additional pre operative assessment appointments** - **5,379 post operative follow up appointments**
Orthopaedic Surgery – see and treat	There is clear demand for capacity for additional elective procedures therefore the NHS GJ see and treat elective orthopaedic service will expand capacity to support the delivery of the following additional activity: Significant additional new outpatient and pre operative assessment for patients undergoing orthopaedic surgery By 2035 4,118 additional orthopaedic procedures spanning the following range: • Primary Total Hip Replacements (PTHR) • Primary Total Knee Replacements (PTKR) • Additional capacity for Revision Arthroplasty Surgery – (in support of the significant previous primary arthroplasty expansions at the NHS GJ over the last 14 years)

	• Full range of Foot and Ankle surgery (forefoot, mid foot, hind foot and ankle procedures) • Additional minor and intermediate hand and wrist procedures.
General Surgery – pre operative assessment and treat	There is significant pressure within the general surgery service – this is illustrated within Figure 20. Significant pressure within emergency care has meant there is insufficient capacity to deliver elective general surgery. Appendix A2 outlines the various options discussed within the West of Scotland Engagement Group for the provision of additional general surgery capacity at NHS GJ. In summary the option of becoming a centre of excellence for hernia surgery whilst also providing some additional capacity for day case lap cholecystectomy was the preferred option. In opting for 2 key procedures the service can be developed to become a high volume centre of excellence the service will offer up to 23 hour stay post operative this covers approx 80% of all hernia procedures within the WoS. The service will provide 1,748 additional general surgical procedures by 2035
Diagnostic Endoscopy	Appendix A2 outlines the service options for endoscopy, developed in partnership with the WoS Health Board Senior Planning Leads. The NHS GJ will provide a diagnostic endoscopy service, ensuring that there is sufficient capacity for patients whose care pathway is as yet undetermined – this will support the delivery of 62 day cancer waiting time targets within the WoS region. Follow up / therapeutic endoscopy will continue to be provided locally, this will ensure continuity of care for patients.

2.13 Further Service Improvements

This section focuses on the work that is underway to further improve patient experience and improve both the quality of the service and the efficiency of the service.

Improving Surgical Patient Admission Processes, the Patient Environment and Continuity of Patient Care:

The new surgical admissions area within the phase 2 new build will support improvement to the patients experience as follows:

- through the introduction of patient 'pods' the service will offer much improved patient privacy, dignity and confidentiality. When patients arrive on the day of surgery they will be allocated their own patient pod - where they will stay and be prepared for theatre, during this short period patients will be admitted by a nurse (bands 3,4 and 5 will be used to support this process), seen by the operating surgeon and the surgical site will be marked, and if required they will be seen by the anaesthetist and skin preparation will be undertaken

- to support the patients while waiting for surgery each patient can be accompanied by a relative / friend or carer within their patient pod, this will help reduce patient anxiety ahead of surgery. The patients relative / friend / carer will remain with the patient until they are ready to go to theatre.

- the new facility will have the capacity to support an increase in orthopaedic day of surgery admission and support an increase in staggered patient admissions – the service will move from approx 50% - 60% of DoSA to over 75% of orthopaedic patients being admitted on the morning of their procedure

- SARU will have longer opening hours, this will enable Day of Surgery patients (general and foot and ankle) who have their procedure later in the day the opportunity to recover and be clinically discharged; negating the need for an overnight bed.

- Patients undergoing orthopaedic surgery will be taken to theatre by the nurse who admitted them to the surgical admissions unit, this will improve the continuity of each patient's care. The patient will be taken straight to the theatre holding room the surgical admissions nurse will then stay with the patient until the theatre anaesthetic nurse is ready to receive the patient and a single nursing handover will take place (presently all orthopaedic patients are taken to theatre by surgical admission staff and are looked after within the theatre pre op area before being transferred to the theatre holding room and there are two nursing handovers)

2.13.1 General Surgery Service – further improvements

- Creation of a centre of excellence for day case and 23 hour stay general surgery – the service will focus on predominantly providing hernia surgery, providing capacity for a

further 1,510 hernia procedures, with a small number of additional of lap cholecystectomy procedures (~238). Significant work is underway to further improve the patient pathways for hernia surgery with the aim of becoming a high volume hernia centre of excellence.

- Theatre utilisation– within general surgery there are opportunities to improve theatre utilisation – it has been assumed that these theatres will deliver 90% utilisation across 48 weeks per annum - in line with the agreed National Elective Treatment Centres performance assumptions.
- When compared to other elective services delivered at the GJNH general surgery cancellation rates remain relatively high. Work is ongoing to review existing processes, within the new model of care pre-operative assessment clinics would take place at the GJNH allowing time and resource to ensure all relevant tests and investigations are up to date before admission.
- In tandem to support the service improvements the board are working towards a hybrid model of resident and visiting consultant general surgeons. Some of this recruitment is likely to rely on working with other WoS Health Boards to create attractive and flexible joint consultant job plans.

2.13.2 Endoscopy Service – further improvements

- The current endoscopy service is located within the main theatre suite. The creation of a purpose built facility will significantly improve patient flow and the patient and staff environment.
- The use of patient pods with ensuite WC facilities will vastly improve the patient experience. Patients will be assigned a pod on admission which they will use pre and post procedure, minimising distances for patients to walk and negating the need for movement of patient personal belongings from a pre to a post operative area.
- In addition a programme to train Non medical endoscopists will be set up this will involve working with WoS Health Boards who have already successfully trained non medical endoscopists.

2.13.3 Theatre department - general improvements

- The main theatre suite will be supported by significantly improved:
    - clinical storage
    - MDT smart hub facilities (space for staff to review images, access clinical records and create op / discharges notes & have a short break)

- additional staff rest facilities
- additional staff changing facilities.

- These improvements will support ease of access to equipment and ease of access to staff rest and smart hub facilities for staff of all disciplines, providing the tools and space for staff to use their time efficiently whilst also supporting improved staff wellbeing.

2.13.4 Orthopaedic Surgery – further improvements

- **Introduction of Robotics for knee replacement surgery -** the surgical divisional management team have developed a business case to introduce an orthopaedic robot for knee replacement surgery. This will improve surgical accuracy and potentially reduce length of stay. Use of robotic technology may also ultimately reduce revision rates, a further improvement for patients and reduce costs.
- **Changes to Anaesthetic Techniques and Further reduction in Length of Stay –** over the last 10 years with the introduction of the enhanced recovery approach LoS for primary arthroplasty has reduced significantly. The more recent introduction of the Hunter Canal technique providing an anaesthetic block for patients undergoing knee replacement surgery has demonstrated improved analgesia to the knee, supporting patients to mobile faster post operatively and ultimately has reduced length of stay. This technique has been fully adopted in the last 2-3 years by the entire anaesthetic team, further reducing length of stay.
- **Day one discharge** – at present 20-30% of hip patients are discharged on day 1, with 60% of knee patients discharged by day 2. It is envisaged through time a higher percentage of patients will be discharged day 1 / 2. The inpatient bed modelling has identified the requirement for a mid week peak of ~67 additional orthopaedic beds in 2035 – to support both primary and revision arthroplasty patients (plus up to 7 additional general surgery short stay beds). It is difficult to predict exactly at what pace length of stay may reduce further in the next 15 years, therefore as the GJNH expands it will continually review its bed base only opening additional beds as and when required.
- **Arthroplasty Rehabilitation in Scotland Endeavour (ARISE)** - The development of the ARISE national minimum data set will inform the future development of the orthopaedic service, beginning with the introduction of a frailty assessment.
- **Changes to the post operative follow up process –** since the IA was approved the GJNH have changed the process for post op follow up for primary arthroplasty. Patients are now followed up at 6 and 12 weeks and usually discharged thereafter, a small number of patients do require follow up, this will be indicated at the daily MDT meeting. This new process provides a much more patient centred approach to post operative care and targets

clinical resources for those who require to be seen and avoids unnecessary travel for patients.

- **Use of Video conferencing for new and review patients -** the roll out of VC for all NHS Shetland new outpatients has been extremely successful. This is also currently being piloted with Highland and Western Isles and is working well, there is potential to rol this out to NHS Orkney in the future.
- **Patient videos** – significant work has already been completed to provide on line patient videos which have been available for patients to view since August 2018.The current hip videos are being updated to reflect change in practice following the introduction of the trial to remove hip precautions.
- **Increased Opportunity for research and development –** the increased activity volumes will facilitate opportunities to seek additional R&D within orthopaedics, it is envisaged that more research could be delivered through use of the Gait lab one example being the measurement of patients gait and movement pre and post ankle replacement surgery.
- **Occupational Therapy** – review of the Occupational therapy pathway in clinic has led to the introduction of a new screening process for patients awaiting joint replacement surgery. A screening tool will be tested in clinic to identify patients who require Occupational Therapy assessment in advance of surgery with the aim to reduce the number of patients who require a face to face assessment in clinic.
- **Physiotherapy Clinic for Foot and Ankle Patients** –the planned introduction of a regular follow up physiotherapy clinic (1 session per week) to improve the post-operative pathway for patients following complex foot and ankle surgery. This expedites progression of mobility and onward referral to outpatient services as described in post-operative protocols.
- **'Foot school'** – in line with our Joint school the rehab team have developed a foot school for patients undergoing more complex foot and ankle procedures, this has supported a reduction in the length of stay for patients who undergo more complex foot procedures with fewer patients requiring an overnight stay within hospital following their procedure
- **Creation of a Foot and Ankle Medical Fellowship** – as the service expands and developed the creation of a formal foot and ankle clinical fellowship position would support training and promote links with institutions within the UK and or overseas. This post would also support increase research activity within the foot and ankle service.
- **Advanced Practitioner roles within Foot and Ankle service –** as the service expands there is opportunity to further recruit to advanced practice roles, to support the delivery of both new and follow up outpatient services, maximising consultant time. The foot and ankle service is currently well supported by an Advanced Practitioner, within our workforce plan we have assumed investment in AP roles for the expansion of the foot and ankle service

- **Advanced Practitioner roles within Hand and Wrist service –** as the service expands there is opportunity to introduce advanced practice roles, to support the delivery of both new and follow up outpatient services, maximising consultant time. the AP's within the Hand and Wrist service could see new outpatients with the following conditions trigger finger, carpal tunnel syndrome, lumps and bumps, dupytrens etc.
- **Hand and Wrist Service – changes to OP follow up protocols** – as the service expands further redesign of the post op follow up service will be implemented , initial follow up for some patients could be via telephone with a nurse or physio providing telephone advice where required negating the need for the patient to travel to hospital. All plaster changes are already undertaken by physio with dressing clinics led by an OP nurse. All face to face follow ups are physio led.
- **Hand and Wrist Service – maximising theatre and consultant time** – steroid injections could be undertaken within a treatment room in clinic with access to a mini c arm and training this could be led by a physiotherapist. this will free up consultant operating time

2.13.5 Improvements Supported by Technology:

- Within our model we have assumed a number of improvements that will be supported by new technologies:

- A paperlite approach will be in place- through use clinical pathways within GJNH Electronic Patient Record (EPR) – minimal information will be produced / captured in paper format (please note this is being managed as a separate project and will be delivered ahead of phase 2 opening)

- Clinical portal will be used as the main repository of clinical information – access to this has already been rolled out to across West of Scotland Boards including Greater Glasgow & Clyde, Lanarkshire, Ayrshire & Arran and Dumfries & Galloway. Testing of access to NoS and EoS portals is also underway to support cross boundary flow

- Self check in facilities are likely to be provided within the outpatient and pre operative assessment service. As part of phase 1 of the hospital expansion the roll out of fully accessible self check in facilities is being taken forward – lessons learned from this will be fed into phase 2 to ensure any self check in provided is fully accessible regardless of disability.

- Use of touch screens will enable real time production of the patients operation note ready for electronic transfer to GPs

- Quick swipe access will be provided to systems to enable fast login to multiple systems by our clinical teams

- Facilities will be fully wifi enabled for staff and public access

- There is potential to develop the clinical portal into a patient portal whereby patients can check appointments and correspondence etc online at home

- NHS GJ are in the process of developing a business case for electronic prescribing. Patient safety can be improved through e-prescribing by increasing prescription legibility, decreasing the time required to prescribe medications and dispense them to patients, and decreasing medication errors and adverse drug events.
- The use of voice recognition technology has been implemented successfully within radiology, and more recently has been piloted within the arthroplasty practitioner service. It is anticipated that the rollout of this technology into other services during the next 12 months will deliver productivity efficiencies.

2.14 Proposed Recruitment, Training and Workforce Plan

Working with the Hospital Expansion Programme Team the Senior Nursing Team and Heads of Departments have developed the overall workforce requirements for each financial year based on both the predicted activity each year identified through the demand modelling and the clinical model(s) of care.

The ensure the plan is deliverable recruitment and training timelines have been identified for each staff group to understand the lead in periods ahead of opening and or expansion each year.

The delivery of a sustainable workforce plan will be supported by the following:

- Ensuring recruitment of posts happens in a well managed, creative and timely way allowing time for induction and or further training.

- Working in partnership with other WoS Health Boards to fill the difficult to fill positions. e.g. consultant general surgeon and consultant anaesthetist posts. Developing flexible, joint job plans, to further enhance the job plans of the existing hard to fill consultant posts within other Health Boards. (It is important to note that this is already established successful practice within ophthalmology between NHS GJ and NHS Forth Valley).

- Ensuring that we liaise with WoS training programme director to offer further training placements for junior doctors in training, supporting the next generation of consultants to be

trained in a high volume elective service

- Ensuring there continues to be the appropriate nursing skill mix and numbers to support an excellent patient experience and efficiency of patient flow for 4 joint lists.

- Consider flexible work patterns for nursing staff which will support nursing workforce planning, recruitment and efficient utilisation of staff.

- Building on the NHS GJ branded theatre nursing 'Training Academy' - speciality specific theatre nurse training will be established to support the training of band 3, 4 and 5 nursing staff ahead of each phased expansion. Given the limited number of experienced theatre staff and with significant number of theatre nursing vacancies across Scotland - this will be an essential part of our workforce plan to ensure the activity levels set out can be delivered year on year but also so that existing hospitals are not destabilised by the GJ expansion.

Further integrating the clinical teams through:

- Development of a new nursing workforce model which will support an integrated approach for Day of Surgery patients and will also offer the opportunity to develop new ways of working for existing staff. Nursing staff will acquire the skills and knowledge to care for patients by working flexibly across the traditional boundaries of theatre and SARU – supporting continuity of care for patients, encouraging closer working between SARU and theatres and the opportunity to streamline the patient handover process which will lead to a more personalised approach and improved patient outcomes.

- Considering how we can prepare nurses for future needs and roles and ensure that nursing staff receive the right educational and personal support to care for patients now and in the future. With the growing demand on the workforce increasing the opportunities to provide vocational qualifications will allow employees to study in the workplace whilst carrying out their normal day to day duties and ensures that staff development is aligned with service needs. NHS GJ proposes to provide additional resource for a Clinical Educator (Vocational Learning). This post would oversee HCSW development, creation of extended roles and the potential to include other areas of the organisation including:

    - Business and Administration

    - Management

    - Learning and Development

    - Healthcare Support (non clinical)

- Advancing the role of nurses to work as part of the wider multidisciplinary team; enabling the opportunity to maximise consultant time in theatre, SARU, clinic and endoscopy; for example;

    - Review of the Surgical Care Practitioner role to potentially include surgical site marking, consent and immediate post op review before discharge.

    - Exploring the potential to introduce the role of non-medical endoscopist to support the delivery of diagnostic endoscopic procedures. Consider dual SCP and non medical endoscopist roles which may be more attractive for recruitment and offer flexibility across the service.

    - Expanding the role of non medical prescribers within clinic by increasing the number of pre-op practitioners undertaking the non medical prescribing module; working in collaboration with the pharmacy department to support and improve the patient flow in clinic

- Reviewing potential HCSW generic roles working across departments which will also assist nursing staff to increase the time spent on direct patient care and facilitate further development of the nursing team.

- In addition the workforce plan has taken into account the requirements of the clinical and non clinical support services as the service expands. Additional resources required have been identified through discussion with the relevant heads of department and built into the revenue costs.

A summary of the phase 2 workforce plan is provided in Appendix A6.

3 Is the Case for Change Still Valid?

	Question	Response
Strategic Context	Is the case for change still valid?	Summary confirmation of the: • Need for change. • Investment objectives.

3.1 Need for Change

The IA provided a full list of the main issues causing the need for change which is reaffirmed and reprovided below Figure 39 describes the effect if no action is taken and an explanation of why action needs to be taken now.

Figure 39: Summary of the Need for Change and Investment

What is the cause of the need for change?	What effect is it having, or likely to have, on the organisation?	Why action now:
Significant increase in the current and predicted future service demand - Existing capacity within in the WoS is unable to cope with future projections of demand for orthopaedic surgery, General Surgery and Endoscopy between now and 2035	Existing capacity is unable to cope with current activity and will be unable to cope with the significant future projections of demand	The service will not be able to sustain the current position – if the plan to provide additional capacity isn't implemented now patients will face a much longer wait for surgery and waiting time guarantees will not be met for majority of patients
The current clinic and theatre accommodation is fully utilised at NHS GJ – there is now further ability to expand surgical services	Until 2017 the NHS GJ was able to support NHS Scotland by increasing surgical capacity year on	Expansion of the existing facilities at the NHS GJ will enable the existing highly efficient and

	year – this is no longer an option and patients are having to wait much longer for their elective surgical treatment.	effective services to be expanded year on year to meet the growing needs of the WoS population

In the period following the approval of the IA there has been no change in service delivery within the West region or any change to national policy which affects the case for change and the programme team continue to develop a solution which:

- Is supportive of both the West Regional Delivery Planning process and the National Delivery Planning process
- Delivery of an innovative service and clinical model that is safe, effective and person centred
- Delivery of an innovative and sustainable workforce solution, that does not destabilise the status quo

The IA set out the investment objectives associated with this proposal - there have been no change to these objectives since they were identified and developed as part of the IA, all of the objectives are still valid

Figure 40: Investment Objectives

	Effect of the need for change on the organisation:	What has to be achieved to deliver the necessary change? (Investment Objectives)
Capacity Related Objectives	Existing capacity within in the WoS is unable to cope with future projections of demand for orthopaedic surgery, general surgery and diagnostic endoscopy between now and 2035.	1. There is a requirement to improve current service capacity to meet the significantly increased predicted demand between now and 2035
	More patients treated in the high cost independent sector - existing capacity pressures mean NHS Board have to access high cost surgery/ procedures within the independent sector	2. Improve capacity to facilitate the reduction or elimination of routine use of the independent sector
	More patients do not access services within the current waiting time guarantees - existing capacity pressures mean that often NHS Boards are unable to meet Scottish Government waiting time guarantees	3. Improve capacity and performance to ensure the delivery of current and future Scottish Government guarantees for inpatient / day case waiting times on a sustainable basis
	Sometimes elective surgery is cancelled as a result of existing service and or capacity pressures	4. Provide sufficient dedicated elective capacity to reduce the likelihood of cancelling patients
Quality and Performance Related Objectives	Service performance is variable - there is a need to improve existing service performance and improve current efficiency and productivity by providing more innovative models of care and adopting the principles of Better Care, Better Health and Better Value as set out	5. Reduce variability and introduce innovative models of care – to improve overall service performance within orthopaedic surgery. This will deliver increased service efficiency and productivity

	in the Scottish Government "Health and Social Care Delivery Plan" published in December 2016	
	Existing facilities are functionally ineffective and are unable to support more innovative models of care and efficient patient flow	6. A new improved environment and facility will be integral to supporting the more innovative models of care and also essential to support improved clinical productivity
	The NHS GJ service model and patient pathways have been redesigned and are evolving , however the service could be more person centred and delivered in a more innovative and sustainable way. NHS GJ is aspiring to be 'best in class' and provide 'world class model of care' for patients whilst also supporting the recruitment, retention and well being of staff - supporting and encouraging staff development	7. To implement new, innovative models of care is a state of the art environment adopting best practice principles (nationally and internationally) 8. To develop a workforce model that supports recruitment retention and supports staff wellbeing and development whilst also ensuring the workforce model is efficient and sustainable

4 Is the choice of preferred strategic solution still valid?

	Question	Response
Strategic	Is the choice of preferred strategic solution(s) still valid?	Confirmation of the preferred strategic / service solution(s).

A relatively short period of time has passed since the Initial Agreement for this proposal was developed in May 2018 (and later approved by SG CIG on 25th September 2018). Revisiting the principles of the preferred strategic / service solution has identified that there is no change required to the preferred solution. It remains true that the provision of additional orthopaedic surgery, general surgery and diagnostic endoscopy capacity is urgently required to support the needs of the current and future forecast population within the WoS region, this is strongly supported by a much higher forecast growth in those aged over 60, when compared with the +60 population growth between 2005 and 2015.

However in September 2018 the Cabinet Secretary for Health and Sport wrote to all NHS Board Chief Executives (see Appendix A3) confirming that the elective centres should be planned and approved on the basis that they will deliver new capacity for the increasing additional demand and that all Health Boards will as a minimum continue to make use of the Golden Jubilee as a National resource to the current levels of patient activity and specialties as at present. Therefore the options within the IA required re-framing. The Options presented within this OBC no longer focus on the level of repatriation of activity, instead they have been reframed as follows (further detail is provided within section 8.2):

- Option 1: Do minimum
- Option 2: Provision of additional general surgery activity
- Option 3: Provision of additional orthopaedic, general surgery and diagnostic endoscopy activity (delivers the same capacity as the preferred option within the IA)

The proposal will also provide the opportunity to deliver all the additional benefits set out within the IA, further improving the NHS GJ model of care and enhancing the patient experience.

Economic Case

5 Economic Case: Overview

This section of the OBC will provide a detailed analysis of the benefits, risks and costs of each of the short listed options, including the Do Nothing option.

This section will demonstrate the relative value for money of the preferred option and includes the following steps:

Economic Appraisal
Key Steps
Identify a short-list of implementation options
Identify and quantify monetary costs and benefits of options
Estimate non-monetary costs and benefits
Calculate Net Present Value of options
Present appraisal results

6 Identify a short-list of implementation options

6.1 Develop a short-list of implementation options

As part of the Initial Agreement, a list of options were developed and shared with the Stakeholder Group. Given the NHS GJ estate is now at full capacity and this project is project 1 of 2 projects of expansion on the NHS GJ site, there were no viable refurbishment or reconfiguration options to deliver the size and scale of this project.

Given the NHS GJ estate is located on a single site, with a hospital entrance and a separate hotel entrance, in 2015 a site master planning exercise was carried out prior to completion of the IA to ensure all potential locations for the phase one expansion were identified.

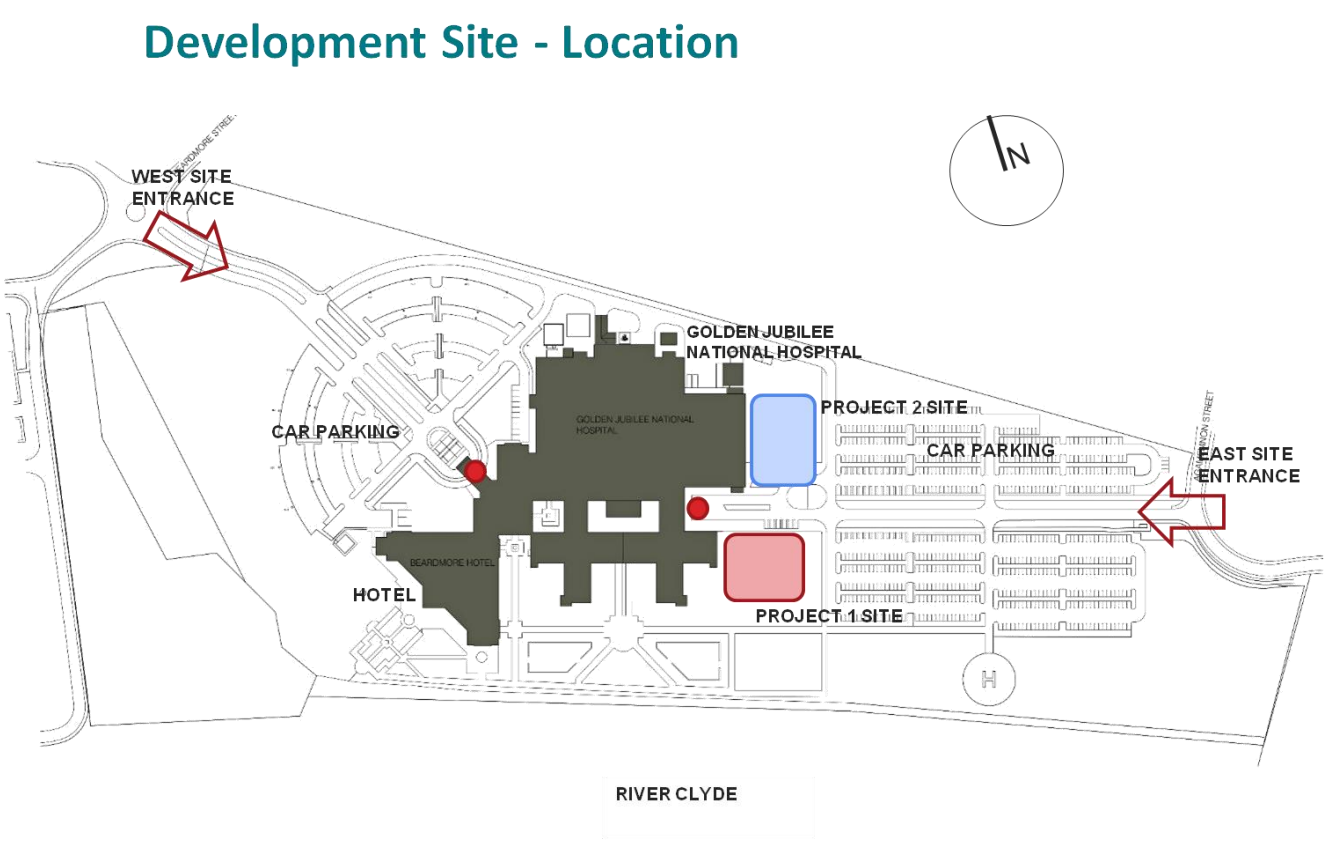
6.1.1 Development Sites Identified through the Site Master Plan Process

Three sites were identified within the NHS GJ master plan development for further expansion.

- Site 1 being land at the West of the site to the left of the hospital main entrance
- Site 2 being land at the West of the site to the right of the hospital main entrance
- A third site was identified at the West side of the hospital adjacent to the current research and innovation centre collocated with the Golden Jubilee Conference Hotel.

Sites 1 and 2 given the collocation with existing clinical services, were the most appropriate for clinical development. Site 2 would enable the extension of the main theatre suite and was deemed more suitable for the phase 2 orthopaedic and other surgical specialties expansion.

Figure 41: NHS GJ Site Map and Locations for Clinical Expansion



6.2 Option Identification

Section 4 of this OBC explains that in light of the confirmation in September 2018 from the Cabinet Secretary for Health and Sport the short listed options have been revisited and reframed to exclude repatriation of existing activity from the GJNH.

In addition as part of the OBC work, the demand modelling has been refreshed (see section 2.2) this work has confirmed that the preferred option identified in the IA remains valid, with a requirement for 5 orthopaedic surgery theatres and 2 general surgery theatres and supporting outpatient/ pre operative assessment and pre and post operative care space.

The shortlisted OBC options are set out in section 8.

7 Identify and quantify monetary costs and benefits of options

7.1 Financial Case - Introduction

NHS Golden Jubilee (NHS GJ) continues to deliver on its financial targets to remain within both Revenue Resource Limits (RRL) and Capital Resource limits (CRL) in addition to a challenging efficiency saving programme. The Board is on plan to achieve all financial targets for financial year 2019/20 at this stage with the success of this due to a focus on redesign, innovation and delivery of cash releasing efficiency savings which is pivotal to support the delivery of this expansion.

This financial case will detail all the expenditure and funding modelled in relation to each of the three short-listed options and the affordability of the preferred option on the basis of the financial case in both Capital and Revenue terms.

7.2 Financial Model

For each of the three options the financial model has included an analysis of existing Golden Jubilee revenue costs for activity within Orthopaedic, General Surgery and Endoscopy specialties. This cost base has been built up based upon detailed annual workforce modelling requirements within each service and considered costs from each of the prior year funded expansions within Orthopaedic from Phase 1 through to 6 and recent 2018/19 expansion within both General Surgery and Endoscopy. In addition, the costs reflect current marginal (non-pay costs) aligned with current 3 year rolling Service Level activity agreements.

These prior expansions have been subject to rigorous affordability reviews with Scottish Government at point of expansion and detailed internal scrutiny and benchmarking has been performed of the workforce modelling requirements associated with this expansion phase. Workforce costs appraisal considered both a top-down and bottom-up approach to provide detailed analysis on associated resource needs.

The Golden Jubilee current funding model is assumed within the financial appraisal, which includes the staffing (fixed costs and depreciation) supported by Scottish Government (as allowing the basis of Boards requiring the greatest need to access the Golden Jubilee) and the marginal costs funded by the referring Board.

The capital costs for the two options contain building and refurbishment costs and have been appraised with detailed capital costings undertaken with support from the Board cost advisor. In addition an estimate of the cost of additional equipment for the expansion has been included in the

capital costs, supported by an equipment group set up within the Board.

This has allowed us to apply thorough and detailed benchmarking in relation to staffing resource requirements against prior expansions (to sense check value for money) and in addition to, the annual submission of the Scottish Health Service costs (Costs Book) returns as a benchmarking tool across NHS Scotland, and the recent Independent Sector commissioning activity agreement with NHS GJ.

To support the financial model for each of the three options the following key data input has been applied;

- **Option 1 - Do minimum: provide minimal amount of additional orthopaedic procedures within existing NHS GJ facilities**
    - It is assumed that the demand (through the detailed activity modelling for West of Scotland) is managed by increased use of the independent sector. Taking into account the analysis of the current independent sector usage for West of Scotland Board areas and the opportunity cost associated with this if NHS capacity were not available. For the purposes of this business case this is modelled on an assumption of 100% independent sector usage to cover the gap.
    - This is in line with the previous IA submission
    - Utilising recent Independent sector contract information against the WoS detailed activity modelling, an accurate reflection of the required activity expansion revenue cost if supported by Independent providers has been identified across each specialty.
- **Option 2: refurbish existing NHS GJ facilities to provide minimal amount of additional orthopaedic procedures and all general surgery additional activity**
    - Detailed workforce modelling for the minimal Orthopaedic service requirement and General Surgery activity has taken place. In addition, non-pay resource needs have been assessed on the existing Golden Jubilee marginal cost base and benchmarked to prior expansion marginal cost per case and current non-pay service costs.
    - It is assumed that the remaining Orthopaedic and Endoscopy activity demand (through the detailed activity modelling for West of Scotland) is managed through use of the independent sector taking into account the analysis of the current independent sector usage for West of Scotland Board areas and the opportunity cost associated with this if NHS capacity were not available. For the purposes of the business case

this is modelled on an assumption of 100% independent sector usage to cover the remaining Orthopaedic and Endoscopy procedure group activity gap.

- **Option 3: refurbish existing NHS GJ facilities and create new build accommodation to provide all additional activity within orthopaedics, general surgery and diagnostic endoscopy**

    - Detailed workforce modelling for all service areas supporting the planned activity expansion across Orthopaedic, General Surgery and Endoscopy has taken place. In addition, non-pay resource needs have been assessed on the existing Golden Jubilee marginal cost base and benchmarked to prior expansion marginal cost per case and current non-pay service costs.

    - The workforce modelling requirements includes staff groups and services not previously required within previous phased expansion. However, this is now relevant due to the significant level of expansion being equivalent to 130% increase against the current baseline activity across the whole expansion timescale.

    - To demonstrate value for money a review of cost per case for the total WoS activity plan compared to current costs including recent expansions within both Orthopaedic, General Surgery and Endoscopy and the 2017-18 Golden Jubilee Hospital and Scottish average cost per case from the Cost Book submission as an across Scotland comparator.

7.3 Capital Costs

Figure 42: Capital Costs

Costs in £millions	Proposed Solution 1	Proposed Solution 2	Proposed Solution 3
Capital cost (or equivalent value) inc non-recoverable VAT on build	No capital costs incurred	1,795,316	62,792,365
Optimism Bias	N/A	110,657	4,663,582
Capital Build Cost	N/A	1,905,973	67,455,947

Capital cost for equipping inc non-recoverable VAT	N/A	280,440	12,800,000
Total capital costs including build and equipment	N/A	**2,183,413**	**80,255,847**
Whole of life capital costs	N/A	N/A	113,992,365
Estimated Net Present Value of total Capital Costs	7,156,586	6,546,847	2,085,861

The capital costs included above in relation to building elements have been provided by the Board external cost advisor and are as the stage two construction costs. These have been approved by the Board Cost Control group for the project.

In addition to cost above the items noted below require to be reviewed and then funding can be identified as one of the items is potentially due to a change in external protocols that are outwith the Board's control, these items are:

- Enclosure of the roof top plant – is not included within the current design, however given the current issues relating to ventilation design within new build hospitals this may (in the lifespan of the planning and construction of this project) become a requirement as part of a Scottish Health Technical Memorandum (SHTM) and /or be advised as 'best practice' for the phase 2 development. The additional cost of this is £2,342,036 ex VAT. This cost has not been included within the capital costs of this OBC.

These items are considered below the line as the Board is in the process of discussing funding for these items as they were unknown at the time of developing the IA and are not currently fully defined.

The analysis of the capital build costs for the project are summarised in Figure 43, this takes account of the year in which the building capital costs will be incurred, which is in line with the Board's financial plan.

Figure 43: Analysis Capital Build Cost

Element	Option 1	Option 2	Option 3
	£	£	£
Construction	N/A	N/A	34,504,224
Refurb	N/A	1,168,500	7,941,425
Kiers Design	N/A	148,128	2,553,060
Surveys	N/A	N/A	364,208
Cost Advisor/Project Manager	N/A	N/A	1,669,209
Supervisor/CDMA	N/A	N/A	-
Contingency/Inflation	N/A	204,157	5,573,047
Unrecoverable VAT	N/A	274,531	10,187,192
Optimism Bias	N/A	110,657	4,663,582
Total		**1,905,973**	**67,455,947**

In addition, the above costs it is planned to fund drop of alterations for both phases out of any surplus from the phase one spend, this movement has been include in the numbers above and will be incorporated into the phase one out-turn.

The assumptions made for both options by the cost control group, as advised by the cost advisor are noted below:

- The construction cost includes the following:
  - Build costs as detailed in the stage two cost report
  - Allowance for additional car parking
- The Kiers design cost include the following:
  - All stage one design costs
  - All stage two design costs
  - Part of stage three design costs
- The surveys include all costs for ecological and ground condition surveys
- The cost advisor/project manager costs include the following:
  - The approved costs for the project manager for all stages referred to above
  - The approved costs for the cost advisor for all stagers referred to above – it should be noted that this appointment is a joint role between the Board and the PSCP until target cost is agreed.
- The cost of the supervisor and CDMC are yet to be advised by the cost advisor, at this stage these costs are unknown and will not be confirmed until commencement of construction.

- The contingency included above is calculated at 5% of the construction cost by the cost advisor for the new build and 10% for the refurb element, this is in addition to the Optimism Bias figure. In addition a prudent level of construction inflation has been assumed which relates to the movement in indices between the agreement of the stage two costs and the commencement of construction.

The phasing of the capital construction costs for the capital option is demonstrated below, all costs are inclusive of non-recoverable VAT, at this stage it has been assumed that all VAT relating to Kiers costs is irrecoverable until we finalise a recovery position with HRMC. It is likely that the allowed recovery will be in line with phase one at 9.29%.

Figure 44: Phasing of Capital Construction Costs

Option 2	**2017/18 £'000**	**2018/19 £'000**	**2019/2020 £'000**	**2020/21 £'000**
Capital Cost, inc VAT	N/A	N/A	1,795.3	N/A
Option 3	**2018/19 £'000**	**2019/2020 £'000**	**2020/21 £'000**	**2021/22 £'000**
Capital Cost, inc VAT	67.3	6,890.2	11,547.3	33,789.9

The costs relating to additional equipment is being prepared by the Project equipment group which is a sub-group of the cost control group. The current figures are estimates from prior business cases and take account on the implement of IFRS 16.

The total equipping cost included in
Figure 45 is currently all assumed as core equipment essential for running the new unit. The whole cost has been used when calculating the capital costs and NPV calculations. All costs below are inclusive of VAT.

Figure 45: Equipping costs

	Option 1 £	Option 2 £	Option 3 £
Essential Equipment	N/A	280,440	12,800,000
Total	N/A	280,400	12,800,000
Essential Equipment	N/A	280,440	12,800,000

7.4 Revenue Costs

In compiling the revenue costs associated with the three options the Board has completed a detailed analysis on an annual basis that reflects the increased demand in figure 38 under section 2.10. These annual costs have been summarised within Figure 46 below to align with the key dates of commissioning the builds and therefore additional capacity as noted specifically within Options 2 and 3.

The recurring revenue costs are described in Figure 46.

7.4.1 Recurring Revenue costs

Figure 46: Recurring Revenue Costs

Options Revenue Category	Option 1	Option 2	Option 3	
				Total Cost per case
	£	£	£	
Year 1 (2020/21) Pump priming costs	0	236,904	1,362,780	Incl. In Line below
Total Direct Additional Staffing Cost (Year 2021/22 to 2034/35)	0	2,303,512	18,643,900	£1,475
Total Additional Supplies Costs (incl. Overheads)	0	1,185,618	15,293,997	£1,128

Heat, Light & Power	0	64,806	502,768	£37
Total Additional Cost	**0**	**3,790,840**	**35,803,445**	**£2,640**
Depreciation	0	204,911	2,849,809	
Total Additional cost incl. Depreciation	**0**	3,995,751	**38,653,254**	**£2,850**
Independent Sector use on current capacity shortfall	49,357,320	44,497,880	0	£3,641
Net Additional cost	**49,357,320**	**48,493,631**	**38,653,254**	

Independent Sector capacity shortfall is modelled on current Independent commissioning tariff cost per case of £6,500 for Hip, £6,300 for knee, £10,748 for Revision, £3,000 for Foot and Ankle, £3,500 for Hand and Wrist, £2,712 for Endoscopy and £2,780 for General Surgery procedures against the annual forecast demand for WoS Boards from section 2.10 figure 38. This has been derived from the Golden Jubilee Outsourcing capacity allocation document which is based on negotiated Independent provider catalogue prices. Annual forecast Demand for WoS Boards is based on the forecast capacity gap by specialty as detailed within section 2.10, figure 38. The table above therefore includes 100% of the demand will be provided in the Independent sector for Option 1 at an additional cost to WoS Health Boards of £12m.

Option 2 reflects the reduced reliance on Independent sector for General Surgery activity which is incorporated within expansion here at Golden Jubilee National Hospital. However, with a remaining need for the majority of additional Orthopaedic capacity and all Endoscopy capacity to be managed within the Independent sector in line with the tariff cost per case detailed above.

The total costs summary as detailed below (taken from the analysis above) shows that option 3 from a revenue perspective is best value for money. The increased costs in options 1 and 2 relate to the use of the Independent sector to accommodate the unmet demand.

The difference in revenue costs within Option 2 and Option 3 reflect both

a) Different size of the facility and staffing to support that and

b) Option 2 is based upon refurbishment of existing NHS GJ facilities to provide minimal amount of additional orthopaedic activity in addition to all General Surgery activity expansion

needs

The revenue consequences are based upon the existing Golden Jubilee financial model.

The additional revenue costs associated to the Golden Jubilee for the additional demand ranges from option 1 at an additional cost of £49m to option 2 cost of £48m based on financial modelling for minimal Orthopaedic, and all General Surgery and option 3 total cost of £37.4m. This additional revenue would be phased over the next 15 years to 2035 in line with the demand projections shown.

In comparing the above 3 options to the revenue appraisal of Phase 2 Initial agreement the following areas have been identified as reasons for increases noted in all 3 options;

- Option 1 – IA total cost of £48.4m and current OBC cost of £49.4m. The Independent sector costs to cover the total WoS unmet activity demand are based on current and negotiated procedural tariff rates as part of the outsourcing development with NHS GJ, Independent sector providers and Scottish Government and therefore providing a clear and up-to-date basis for the tariff rates applied.

- Option 2 – IA total cost of £32.8m and current OBC cost of £48.5m. This option has changed in terms of the Option output between IA and OBC submissions. In the IA option 2 financials were appraised on the basis of a 4 Theatre build that would accommodate Orthopaedic Growth and not the current OBC option of NHS GJ refurbishment to accommodate minimal Orthopaedic activity and all General Surgery activity. Similar to Option 1 the tariff rates applied for all Endoscopy unmet demand and the majority of the Orthopaedic activity demand are reflective of current Independent provider rates as provided in the recent outsourcing development with Independent providers. In addition, the staffing support costs for General Surgery activity are reflective of current pay costs.

- Option 3 – There is a noted increase in the Staffing support costs from £17.05m in the IA to £20m in the OBC which is mainly associated with the increased payroll based costs directly related to the Scottish Government 3-year pay policy introduced from April 2018 and therefore 2 full financial year cost implications of circa 5.6% applied. This is in addition to the Scottish Government supported superannuation 6% increase implemented from April 2019. Both these national changes have increased the payroll support cost from the IA by £1.9m combined.
  The remaining £1m increase noted is due to the detailed workforce modelling calculated on the agreed service model. As part of the IA financial appraisal it was highlighted that as the service model position has not yet been agreed the ward and outpatient costs were high

level at that stage particularly around General Surgery however these will be updated with more detail and model clarity by Full business case.

Also of note in comparing the Phase 2 IA is that the total revenue resource implications (excl. depreciation) totalled £35.3m and as shown above the OBC revenue resource requirement (excl. depreciation) is now £35.8m and therefore an increase of only £0.5m before depreciation.

Depreciation was not detailed at IA stage revenue resource as the detailed phasing analysis to allow completion was not yet in place.

The Do minimum option is cost prohibitive and not viable as this requires a high reliance on independent sector use to meet the patient demands and allows for no additional capacity to provide this within the public sector. The additional NHS GJ revenue costs for Options 2 and 3 differ due to the significant activity difference in assumptions and they are therefore reflective of the different cost in these options. In Option 3 there is significant avoidance of independent sector reliance which would offset the funding required to support this Phase of the elective centre expansion. This is shown in figure 47.

Figure 47: Cost Summary

Revenue costs Summary	Option 1 (by 2035) - £'m	Option 2 (by 2035) - £'m	Option 3 (by 2035) - £'m
Total cost including 100% independent sector usage to manage the demand	49.357	48.494	38.653

The cost per case of the modelled activity is detailed below and compares this to previous Golden Jubilee Orthopaedic, General Surgery and Endoscopy expansions in addition to the Scottish Health Service costs and the current independent sector tariff.

The recurring revenue costs for the options are compiled on the basis of the following:

- Salary costs are applicable for 2019/20 pay scales and therefore are now reflective of the

last 2 years of the 3-year Scottish Government pay policy at circa 5.4% in addition to the recent 6% superannuation increase implemented from April 2019.

- The financial modelling predicates recruitment to all workforce roles identified but in some service areas this is proving increasingly difficult and therefore may impact on payroll cost out-turn in areas such as General Surgery consultant roles.

- Supplies costs are on the basis of the Golden Jubilee current marginal tariff rate for Orthopaedic, Endoscopy and General Surgery by identified procedure and are at 2019/20 cost base.

  We can see from the recurring revenue table that the cost per case in Option 1 equates to £3,641 and for option 3 this decreases to £2,850 and therefore Option 3 reflects overall economies of scale.

7.4.2 Cost per Case analysis

The points below review the cost per case of the modelled activity and compares this to prior 2018/19 Orthopaedic, General Surgery and Endoscopy expansions in addition to the Scottish Health Service costs and the independent sector tariff.

- Option 1 Total cost of **£49.4m** and cost per case of £3,641 for Independent sector

- Option 3 Total cost of **£38.6m** and cost per case of £2,850

- 2018/19 Cost Book Scottish average cost per case against proposed WoS activity demand modelling is shown below;

  - Orthopaedic – £4,975 per case against 4,118 activity demand totals **£20.487m**

  - General Surgery/Endoscopy – £2,768 per case against 9,443 combined activity demand totals **£26,138m**

  - Total combined revenue resource of **£46.625m**

- This benchmarking analysis shows the value for money position within option 3 when compared to Option 1 and the cost book cost per case analysis applied to WoS activity demand modelling. This reflects a cost per case reduction of £791 on Independent sector in addition to avoiding any reliance on this sector to cover activity shortfall, in addition to a reduction of £7.972m on the Cost Book Scottish average tariff for the same specialties.

7.4.3 Non-Recurring Revenue costs

In addition to recurring revenue costs related to Phase 2 there are also non-recurring revenue commissioning costs that need to be considered and these are reflected below, the timing of these are shown below in Figure 48.

Figure 48: Non-Recurring Revenue Costs

Non-Recurring cost	Cost £	Planned Funding Basis
Deep Clean cost on new build on handover and at breakthrough sites	£150,000	Likely to be assumes within 2020/21 Golden Jubilee Financial Plan. Costs are to be finalised for FBC stage.
Training costs and workbook completion for Domestic service roles.	£171,088	Golden Jubilee funding likely to be assumed within 2020/21 Financial Plan.
E-health commissioning cost to roll-out necessary equipment, network and test prior to implementation	£22,466	Likely to be assumed from within 2012/21 Golden Jubilee financial plan.
Dual running costs	£62,000	Value to be confirmed and what is included within this

The above total non-recurring revenue costs of £500,118 are likely to be assumed within 2020/21 Golden Jubilee financial plan, however this requires agreement.

7.4.4 Income analysis

The following table shows the projected income (and funding) for option 3 summarised over the period of the expansion. The specific detail of this by Health Board (by year) is shown below.

This assumes the current Golden Jubilee funding model with Scottish Government supporting the fixed costs (including staffing and depreciation) and the referring Boards funding the existing marginal costs.

Figure 49: Income Analysis

Financial Year	Option 3 – Scottish Government £'m	Option 3 – WoS Health Boards £'m
2020/21 – Additional first year funding (pump priming staff)	1.363	0
2021/22 – (Additional to 2020/21) second year funding	7.360	5.605
2022/23 – (Additional to 2020/21 and 2021/22) third year funding	1.829	1.634
Final 2034/35 – Cumulative as at 2034/35	22.856	15.797

The Income analysis table (Figure 49) reflects the in-year additional income due from 2020/21 through to 2022/23. The final 15-year cumulative income value for the full activity expansion (13,561 cases in Option 3) is then split across each Health Board contribution to provide detail to each Board of total funding planned by year 15.

The additional tables below take this analysis further to reflect both the annual and cumulative funding basis in Figure 50 and Figure 51 in respect of individual WoS Boards funding on marginal cost and Scottish Government staffing and depreciation.

Figure 50: Annual Funding Impact by Health Board and Scottish Government (excl. Depreciation)

Annual Funding Impact - Phased by Health Board	NHS A&A	NSH D&G	NHS FV	NHS GGC	NHS L	Total	Scottish Government - Staffing support
2020 2021							£1,362,780
2021 2022	£888,624	£355,033	£915,807	£1,849,865	£1,600,931	£5,610,259	£7,359,681
2022 2023	£227,912	£89,207	£267,979	£568,027	£483,201	£1,636,326	£1,828,617
2023 2024	£131,215	£50,595	£145,164	£318,563	£257,065	£902,602	£1,299,653
2024 2025	£124,975	£48,270	£136,205	£308,545	£250,878	£868,873	£1,464,285
2025 2026	£128,865	£50,702	£143,024	£313,636	£256,807	£893,034	£1,243,782
2026 2027	£99,777	£37,780	£114,939	£267,635	£210,367	£730,499	£713,388
2027 2028	£77,070	£25,152	£78,222	£225,514	£163,327	£569,285	£712,896
2028 2029	£84,080	£30,347	£102,248	£243,003	£182,353	£642,031	£595,778
2029 2030	£88,973	£31,972	£104,862	£255,426	£191,204	£672,438	£923,340
2030 2031	£88,836	£31,717	£109,392	£260,601	£197,019	£687,565	£690,819
2031 2032	£85,299	£31,853	£106,138	£259,841	£194,840	£677,972	£898,314
2032 2033	£79,422	£29,742	£105,057	£247,852	£184,287	£646,360	£443,938
2033 2034	£58,637	£24,440	£85,816	£197,495	£140,673	£507,062	£380,132
2034 2035	£30,289	£13,674	£55,038	£336,493	£185,154	£620,648	£89,276
2035 2036	£0	£0	£27,498	£54,213	£48,609	£130,320	£0
Cumulative Funding Impact 35/36	£2,193,975	£850,485	£2,497,389	£5,706,710	£4,546,715	£15,795,275	£20,006,680

Figure 51: Cumulative Funding Impact by Health Board and Scottish Government (Including Depreciation)

Cumulative Funding Impact - Phased by Health Board	NHS A&A	NSH D&G	NHS FV	NHS GGC	NHS L	Total	Scottish Government - Staffing support	Scottish Government Depreciation support
2020 2021						£0	£1,362,780	£0
2021 2022	£888,624	£355,033	£915,807	£1,849,865	£1,600,931	£5,610,259	£8,722,460	£0
2022 2023	£1,116,536	£444,240	£1,183,786	£2,417,892	£2,084,132	£7,246,585	£10,551,078	£0
2023 2024	£1,247,751	£494,834	£1,328,950	£2,736,455	£2,341,197	£8,149,188	£11,850,730	£2,849,809
2024 2025	£1,372,726	£543,105	£1,465,155	£3,045,000	£2,592,075	£9,018,061	£13,315,016	£2,849,809
2025 2026	£1,501,591	£593,807	£1,608,179	£3,358,636	£2,848,882	£9,911,095	£14,558,797	£2,849,809
2026 2027	£1,601,368	£631,588	£1,723,118	£3,626,271	£3,059,249	£10,641,594	£15,272,186	£2,849,809
2027 2028	£1,678,438	£656,739	£1,801,340	£3,851,786	£3,222,576	£11,210,878	£15,985,082	£2,849,809
2028 2029	£1,762,518	£687,087	£1,903,588	£4,094,788	£3,404,928	£11,852,910	£16,580,861	£2,849,809
2029 2030	£1,851,492	£719,059	£2,008,450	£4,350,215	£3,596,132	£12,525,347	£17,504,200	£2,849,809
2030 2031	£1,940,327	£750,776	£2,117,842	£4,610,816	£3,793,151	£13,212,912	£18,195,019	£2,849,809
2031 2032	£2,025,627	£782,629	£2,223,979	£4,870,657	£3,987,991	£13,890,884	£19,093,333	£2,849,809
2032 2033	£2,105,049	£812,372	£2,329,037	£5,118,509	£4,172,278	£14,537,245	£19,537,271	£2,849,809
2033 2034	£2,163,686	£836,812	£2,414,853	£5,316,004	£4,312,951	£15,044,306	£19,917,404	£2,849,809
2034 2035	£2,193,975	£850,485	£2,469,892	£5,652,497	£4,498,105	£15,664,955	£20,006,680	£2,849,809
2035 2036	£2,193,975	£850,485	£2,497,389	£5,706,710	£4,546,715	£15,795,275	£20,006,680	£2,849,809
Cumulative Funding Impact	£2,193,975	£850,485	£2,497,389	£5,706,710	£4,546,715	£15,795,275	£20,006,680	£2,849,809

Figure 52: Expenditure and Income Summary

Expenditure & Income Summary	Option 1 - £'m	Option 2 - £'m	Option 3 - £'m
Total income needed Split as:	49.357	48.494	38.653
SG support- staffing	49.357 (All Independent sector)	2.540, plus 44.498 = 47,038 (All Independent sector)	20.006
SG support- depreciation		0.204	2.850
HB support		1.251	15.797

	49.357	**48.494**	**38.653**
Offset by			
Independent sector costs required if the expansion facilities were not available	**49.357**	**44.498**	n/a

7.4.5 Future Challenges

From a revenue perspective there are a number of challenges that will need to be considered and managed across period of expansion including the following:

- Impact from year 3 of the 3 year nationally agreed pay policy as financial modelling based on current 2019/20 pay rates, and 2020/21 pay policy indicates a further average 4.52% increase in this year.
- Future Health Board agreed funding model inflation rates from 2019/20 onwards
- Pump priming for Training of staff and further development of the Theatre Training academy
- Recruitment to 'hard to fill Medical posts', the financial modelling assumes direct recruitment to all posts, however there is recognition of the challenges in General Surgery consultant recruitment and likely options to fill through joint appointments (for example).

7.4.6 Future Efficiencies

The financial model reflects costs in line with existing innovations and benchmarks and the cost book NHS Scotland average tariff for Orthopaedic, General Surgery and Endoscopy, however there is recognition within the Board of future opportunity benefits and efficiencies that may allow for further review between OBC stage and FBC and then into the expansion implementation period. These include:

- Continued investment in recruitment and training to allow reduced reliance on expensive waiting list cover for Medical staffing, including actively progressing joint appointments where possible with other NHS Health Boards in Scotland.

- A business case proposal to procure a Robot for use within Orthopaedic Surgery, recently approved by the Boards capital group and currently being taken through the Boards internal approval with the Senior Managers Team and the Board. If approved this would improve patient experience and support continued innovation, providing opportunities for medical training and support the recruitment and retention of staff.
- Full implementation of innovative technologies such as Electronic Patient record and voice recognition will be in place across all specialties.

7.5 Affordability

The capital funding (including equipment) for the elective centres is ring-fenced capital monies from the Scottish Government for the creation of a number of elective treatment facilities in Scotland.

The revenue position for each of the 3 options and associated Income analysis are summarised in Figure 53 note is that option 1 and 2 assume independent sector . Option 3 split based upon the current Golden Jubilee funding model.

Figure 53: Revenue Costs and Funding – summary

Revenue costs Summary	Option 1 (by 2035) - £'m	Option 2 (by 2035) - £'m	Option 3 (by 2035) - £'m
Net Additional cost	**49.4**	**48.5**	**38.6**
Funding due from – Scottish Government (Staff & depreciation, Independent Sector)	**49.4**	**47.242**	**22.857**

Funding due from – WoS Boards on a marginal cost basis		**1.251**	**15.797**

The revenue funding assumptions are in line with existing funding model in place within the Golden Jubilee.

8 Non Monetary Costs and Benefits of the Short Listed Options

8.1 Introduction

A non monetary costs and benefits appraisal Workshop was held on Tuesday 21st May 2019, there was a wide range of stakeholder input from patients, staff and third sector representatives. The participants are listed in Figure 54 below.

Figure 54: Workshop Participants

Name	Job Title
James Farmer	Patient
Agnes Veronica Smith	Patient
John Vann Looy	Patient
Peter Robertson	Patient
Sandra Pairman	Volunteer
Lucy Dorian	Scottish Health Council
Lorna Bonaccorsi-McIlreavy	Scottish Health Council
Tilda McCrimmon	Alz Scot lead nurse for dementia
Dawn Buchan	Senior Charge Nurse Orthopaedics
Shirley McCourt	Enhanced Recovery After Surgery Lead
John Luck	Consultant Anaesthetist
Jane Gaffney	Charge Nurse Surgical Day Unit
Jackie McLellan	Senior Charge Nurse Outpatients
Joan Clacher	SCN
Christine Divers	Operations Manager
Heather Smith	Programme Administrator
Chris MacLean	Rehabilitation Manager
David Allen	Consultant Orthopaedic Surgeon
Claire MacArthur	Programme Manager
Susan McLaughlin	Clinical Lead
Robert Stewart	Equipment Lead

Rob White	Architect and Access Consultant

8.2 Short Listed Options

The advantages and disadvantages of each of the OBC short listed options were presented to the group in more detail. The group were given time to explore and examine the options proposed as a solution and to inform the development of a preferred non financial option.

The short listed options put forward for assessment by the group was as follows:

Option 1: Do minimum - provide minimal amount of additional orthopaedic procedures within existing NHS GJ facilities:

- Provide 150 additional orthopaedic procedures within existing hospital facilities (from 2023 onwards – when NHS Highland have capacity to repatriate activity) within existing NHS GJ theatres

Option 2: refurbish existing NHS GJ facilities to provide minimal amount of additional orthopaedic procedures and all general surgery additional activity:

- Provide 150 additional orthopaedic procedures within existing hospital facilities (from 2023 onwards – when Highland have capacity) within existing NHS GJ theatres
- Provide 2 additional general surgery theatres
- Reconfigure the existing theatre recovery area to provide additional recovery space
- Provide additional activity (by autumn 2020) as follows:
    - 1,748 general surgery procedures
    - and approx 2,590 Pre-operative assessments per annum (existing and forecast future activity combined)

Option 3: refurbish existing NHS GJ facilities and create new build accommodation to provide all additional activity within orthopaedics, general surgery and diagnostic endoscopy and expansion of clinical and non clinical support services:

- Provide 150 additional orthopaedic procedures within existing hospital facilities (from 2023 onwards – when NHS Highland have capacity to repatriate activity) within existing NHS GJ theatres

- Provide 2 additional general surgery theatres (+ reconfigure the existing theatre recovery area to provide additional recovery space) by autumn 2020 - delivering 1,748 general surgery procedures by 2035
- Extend & refurbish the hospital to provide additional activity expanding phased manner between 2021 and 2035 area as follows:
    - 4,118 orthopaedic procedures
    - 7,695 diagnostic endoscopies
    - 3,254 orthopaedic pre operative assessments and 2,590 general surgery pre-operative assessments
    - 9,467 new orthopaedic outpatient appointments and 5,379 additional post operative follow up appointments

The options were described by the Programme Team, and questions were taken from the Group to clarify their understanding of what was being proposed. Following consideration all three options were agreed as appropriate options for scoring within the Non Financial Benefits Appraisal.

8.2.1 Assessment of Benefit Criteria

The group discussed the proposed benefits criteria in detail following which a total of six benefits were agreed for review. These benefits were then ranked and weighted according to how important they were seen to be in achieving the aims of the outline business case.

Figure 55: Benefit Scoring

Ref	Heading	Ranking	Weighting
B1	Patient experience People who use the service have positive experiences and their dignity is respected	1	22.9%
B2	Meets Service demands Supports the Scottish Government in addressing national pressures in the delivery of cataract surgery	2	20.6%

	Supports West of Scotland Health Boards in meeting 'waiting times' guarantees for cataract surgery.		
B3	Efficiency and productivity Supports the Service in delivering the greatest number of patient procedures, at the optimum level of quality, and making best use of time and resources.	5	18.6%
B4	Staff experience Golden Jubilee staff feel valued by the Board and see it as a good place to work.	3	17.6%
B5	Ability to recruit, train and retain staff The Jubilee is seen as an attractive employer, helping them attract staff with the right skills.	4	15%
B6	Wider community benefits There are wider benefits for the local community	6	5.2%
Total			100%

Scoring was undertaken as a group to assess the extent to which each of the options met the criteria using a scoring scale of 0 (could hardly be worse) to 10 (could hardly be better). A consensus reached by the group and each benefit was scored.

The outcome of scoring for each benefit is set out in Figure 55

Figure 56: Weighted Scoring Results by Option

	BENEFIT CRITERIA	WEIGHT %	Option 1		Option 2		Option 3	
		W	SCORE	W x S	SCORE	W x S	SCORE	W x S
1	Patient Experience	22.9	3.0	68.8	4.0	91.7	9.0	206.3
2	Meets Service Demands	20.6	2.0	41.3	3.0	61.9	9.0	185.7
3	Staff Experience	18.6	5.0	92.8	4.0	74.3	9.0	167.1
4	Ability to Recruit Train and Retain Staff	17.6	5.0	88.2	5.0	88.2	8.0	141.1
5	Efficiency and Productivity	15.0	4.0	60.0	5.0	75.0	8.0	119.9
6	Ability to deliver wider Community Benefits	5.2	0.0	0.0	0.0	0.0	6.0	31.5
	TOTAL	100.0		351.0		391.0		851.6

8.2.2 Results of the Non Financial Benefit Option Appraisal: Scores by Option

Following collation of the scores the options were ranked from highest to lowest potential benefit:

Option	Weighted Score	Rank
Option 1: Do minimum - provide minimal amount of additional orthopaedic procedures within existing NHS GJ facilities	351.0	3
Option 2: refurbish existing NHS GJ facilities to provide minimal amount of additional orthopaedic procedures and meet the WoS demand for general surgery activity	391.0	2
Option 3: Expand and refurbish NHS GJ facilities through provision of new build facilities and refurbishment of existing NHS GJ accommodation to meet WoS demand for orthopaedics, general surgery and diagnostic endoscopy and associated clinical and non clinical support services	851.6	1

Option 1 was assessed as offering the least benefit and while it offers minimal additional orthopaedic capacity from 2023 following repatriation of Highland activity there is insufficient theatre capacity to meet future forecast patient demand in WoS for orthopaedics, general surgery and diagnostic endoscopy. Waiting time pressures will be increased and there will be continued use of independent sector hospitals. This option does not support an improved patient centred admission process or provide facilities to improve patient flow, or offer the ability to improve facilities for endoscopy patients. There will be limited opportunity to improve facilities for long term patients undergoing hip or knee revision surgery. The opportunity to look at extended, advanced or generic staff roles will be limited as will the opportunity to improve current consultant workforce model for general surgery and diagnostic endoscopy. There is also no opportunity to provide wider community benefits that are delivered within a large capital project..

Option 2 was found to offer slightly more benefits than option 1, this was due to the ability to meet the forecast demand for general surgery. However, there under this option there would still be insufficient capacity to deliver predicted WoS demand for orthopaedic surgery and there will still be a reliance on higher cost independent sector capacity. There will be an opportunity to focus the NHS GJ service delivery on 2 key day case procedures of gall bladder removal and hernia repair, facilitating the move to create a centre of

excellence for patients within a high volume elective service.

There will also be an opportunity to look at new, extended, advanced or generic staff roles in addition to improving the current consultant workforce model for general surgery and diagnostic endoscopy.

This option does not however support an improved patient centred admission process or provide facilities to improve patient flow, privacy and dignity in endoscopy nor does it provide improved facilities for long term patients undergoing hip or knee revision surgery.

There will be an element of disruption during reconfiguration and refurbishment to provide the additional recovery space required for general surgery.

There is also no opportunity to provide wider community benefits delivered within a large capital project.

Option 3 achieved the highest benefit score (scoring 851 points out of a maximum possible score of 1000 points) and meets service demand for orthopaedics, general surgery and diagnostic endoscopy as capacity will be provided to deliver all future, forecast patient demand. Independent sector hospital usage will be eliminated and patient waiting times will reduce with treatment times being delivered within 12 weeks of decision to treat.

Although there would be a 24 month period of on-site construction which may generate noise and disruption to day to day service and break though into the existing theatre suite will require careful management to avoid service disruption the group agreed that option 3 would deliver the most benefit.

There will be an opportunity to reduce general surgery cancellations through NHS GJ led pre-operative assessment and in orthopaedics more patients will be treated within a planned unit reducing the likelihood of cancellation on the day of surgery.

As purpose built clinical facilities will be provided there will be a significant improvement in patient privacy and dignity with improved facilities for long stay patients undergoing hip or knee revision surgery.

An opportunity will be provided to focus service delivery on gall bladder removal and hernia repair providing a centre of excellence for patients and reduce general surgery patient cancellations on day of surgery through NHS GJ led pre-operative assessment.

This option will also facilitate the expansion of clinical and non clinical support services to support the significant increased clinical activity on site. This option will deliver the expansion of the CSPD department and provide additional refurbished space to support both the expansion of the pharmacy function and the relocation of the medical physics department (currently located within a ward area that will become new orthopaedic inpatient beds as part of the phase 2 project).

There will also be an opportunity to look at new, extended, advanced or generic staff roles in addition to improving the current consultant workforce model for general surgery and diagnostic endoscopy.

It was noted that there would be scope to provide wider community benefits as this option involves significant capital investment in terms of new build and refurbishment

8.2.3 Sensitivity testing

Following completion of the benefits scoring sensitivity testing was undertaken to ensure that the outcome of the exercise was robust and had not been unduly influenced by any single factor.

As shown in the table below, two sensitivity tests were carried out:

Test 1: application of equal weight to each benefit

Test 2: Exclude the top ranked benefit (Patient Experience) from the scoring

The results of the sensitivity tests are set out in Figure 57 and Figure 58. In summary neither of the sensitivity test changed the ranked outcome of the benefit scoring – in both sensitivity tests the option delivering most benefits remained Option 3: refurbish existing NHS GJ facilities and create new build accommodation to provide all additional activity within orthopaedics, general surgery and diagnostic endoscopy.

8.3 Risk Assessment and Scoring by Option

During the risk assessment workshop the identified key risks were reviewed and discussed to consider the risk ratings and mitigation and also any additional risks not captured. Members were asked to consider the likelihood of the risks occurring within options 1 – 3; the same impact rating was applied across all options with a risk score for each individual risk calculated for each of the 3 options. This was then added to provide an overall risk score for each of the four options which is shown in the table below:

Option	Score	Rank
Option 1: Do minimum - provide minimal amount of additional orthopaedic procedures within existing NHS GJ facilities	25	1
Option 2: refurbish existing NHS GJ facilities to provide minimal amount of additional orthopaedic procedures and all general surgery additional activity	160	2
Option 3: Expand and refurbish NHS GJ facilities through provision of new build facilities and refurbishment of existing NHS GJ accommodation to meet WoS demand for	185	3

orthopaedics, general surgery and diagnostic endoscopy and associated clinical and non clinical support services		

In considering the identified risks:

Option 1 as expected was found to be the lowest risk. Given that this option involves no design or construction many of the risks were agreed as non applicable. The key risk in Option 1 relates to the inability to support the increase in demand for the WoS within orthopaedics, general surgery and diagnostic endoscopy specialities.

Options 2 and 3 scored significantly higher on risk which is expected with all identified risks considered applicable to both options. The key difference between both options relates to option 3 being able to provide all predicted WoS additional demand for orthopaedics, general surgery and diagnostic endoscopy by creating new, improved purpose built facilities which will involve a 24 month construction period.

8.4 Top Ranked Option following Risk Assessment and Non Financial Benefits Appraisal

Overall the scoring exercise identified **'Option 3:** Expand and refurbish NHS GJ facilities through provision of new build facilities and refurbishment of existing NHS GJ accommodation to meet WoS demand for orthopaedics, general surgery and diagnostic endoscopy and associated clinical and non clinical support services'.

As the option that delivers the most benefits. The subsequent sensitivity testing did not change the outcome of the scoring with option 4 remaining the option delivering the highest benefit.

Looking at the risk assessment scores for the options not surprisingly options 1 scored the lowest risk, given that it involves no design or construction. Looking at the risk scores of options 2 and 3, option 3 had the highest risk score – this was influenced by the scale of the additional facilities being provided and the 24 hour construction period.

Figure 57: Sensitivity Test 1: Apply Equal Weighting to All Criteria

	BENEFIT CRITERIA	WEIGHT %	Option 1		Option 2		Option 3	
		W	SCORE	W x S	SCORE	W x S	SCORE	W x S
1	Patient Experience	16.6	3.0	49.8	4.0	66.4	9.0	149.4
2	Meets Service Demands	16.6	2.0	33.2	3.0	49.8	9.0	149.4
3	Staff Experience	16.6	5.0	83.0	4.0	66.4	9.0	149.4
4	Ability to Recruit Train and Retain Staff	16.6	5.0	83.0	5.0	83.0	8.0	132.8
5	Efficiency and Productivity	16.6	4.0	66.4	5.0	83.0	8.0	132.8
6	Ability to deliver wider Community Benefits	16.6	0.0	0.0	0.0	0.0	6.0	99.6
	TOTAL	99.6		315.4		348.6		813.4

Figure 58: Sensitivity Test 2: Exclude Top Ranked Benefit Criteria

	BENEFIT CRITERIA	WEIGHT %	Option 1		Option 2		Option 3	
		W	SCORE	W x S	SCORE	W x S	SCORE	W x S
1	Patient Experience							
2	Meets Service Demands	20.6	2.0	41.3	3.0	61.9	9.0	185.7
3	Staff Experience	18.6	5.0	92.8	4.0	74.3	9.0	167.1
4	Ability to Recruit Train and Retain Staff	17.6	5.0	88.2	5.0	88.2	9.0	158.8
5	Efficiency and Productivity	15.0	4.0	60.0	5.0	75.0	8.0	119.9
6	Ability to deliver wider Community Benefits	5.2	0.0	0.0	0.0	0.0	8.0	42.0
	TOTAL	77.1		282.3		299.3		673.5

9 Calculate Net Present Value and Assess Uncertainties

9.1 Net Present Value

Following the identification and measurement of the costs and benefits for each short listed option, a calculation of their Net Present Value (NPV) is included using the appropriate discount rate. The NPV is the key summary indicator of the comparative value of an option. It is the name given to the sum of the discounted benefits of an option less the sum of its discounted costs, all discounted to the same base date. The decision rule is to select the option that maximises NPV or minimises NPC.

Discount rates used is 3.5% for up to 40 years.

GEM has been utilised for option appraisal and GEM outputs are contained within Appendix A13

The guidance contained in SCIM has been used to formulate the costs include in the business case in relation to NPV.

The Net Present Value of the capital and revenue costs are shown in the table below.

Costs in £millions	Proposed Solution 1	Proposed Solution 2	Proposed Solution 3
Estimated Net Present Value of Capital and Revenue Costs	286,263,447	261,873,864	109,470,941

9.2 Assessing Uncertainty

To assess the impact of potential change in demand for the phase 2 facilities a wide range of scenarios have been identified and their impact analysed. 5 potential scenarios were identified as follows:

Figure 59: Scenarios Assessing Uncertainty

<table>
<tr><th>Scenario</th><th>Description</th><th>Potential Impact</th></tr>
<tr><td>1</td><td>NHS GJ are requirement to support other WoS Health Boards with their ongoing orthopaedic wait time pressures in the first 2 years of opening</td><td rowspan="3">Operational: Scenarios 1- 3 would require NHS GJ to open more than 2 orthopaedic theatres in the first year of opening. This would be extremely challenging from both an operational and recruitment and training perspective. The extent to which this could be achieved would be constrained by:

• the number of inpatient beds available – the second inpatient ward will only be available in 2022/23

• The ability to recruit experienced theatre staff and or train newly qualified nurses and HCSW’s.

• The ability of the existing CSPD department to support such significant unplanned additional activity in year 1. The new expanded CSPD department will not be commissioned until 2022/23.

Workforce & Training: There would be a requirement for at least an 8 month lead in time to both recruit and train theatre nurses and theatre HCSW staff to ensure staff are fully trained and have met the required clinical competencies. Without this training period the service may not be able to recruit to the required staffing numbers and/or there is a risk that this significant additional recruitment may destabilise existing WoS surgical services. In addition there would be a requirement to recruit and train additional CSPD staff ahead of time.

Finance: significant additional revenue would require to be provided to support both training in advance of opening this additional capacity and ongoing revenue to support the additional activity.</td></tr>
<tr><td>2</td><td>There is a need for NHS GJ to support the North and East region in the first 3 years of opening due to either orthopaedic waiting time pressures or the delayed commissioning of North and East Elective Treatment Centres</td></tr>
<tr><td>3</td><td>Actual WoS orthopaedic demand is higher than forecast – there is therefore a requirement to accelerate the opening of NHS GJ capacity</td></tr>
</table>

Scenario	Description	Potential Impact
4	Actual WoS demand is lower than forecast – there is excess capacity within the WoS region	**Operational:** if forecast WoS demand is not realised, there would be an opportunity to offer support to the North and East regions. However if there was insufficient demand for general surgery or orthopaedic surgery there would be a requirement to consider how the theatre capacity could be utilised to support an in demand clinical specialty If the service provided additional access for patients within the East and North regions there would be additional patient bedrooms required within the Golden Jubilee Conference Hotel **Workforce:** If there is no demand for general surgery or orthopaedics and there was a need to support another clinical speciality, a lead in time would be required to support the recruitment and/or training of staff to ensure staff have the right skills and competencies. **Finance:** costings developed within this OBC relate to general surgery and orthopaedic procedure and staff costs – there would be a requirement to review the cost of providing a new / different clinical speciality
5	More distant WoS Health Boards support their own upper GI Endoscopy activity and do not send activity to NHS GJ due to travel distances for patients	**Operational:** The endoscopy unit can accommodate a change in case mix to provide a higher proportion of lower GI endoscopy to other more local Health Boards or alternatively re allocate upper GI endoscopy capacity to other WoS Health Boards. However conversely it would be more difficult to provide additional upper GI scopes – due to the available patient pods within the new endoscopy unit. This would also be a challenge within the new endoscopy decontamination area which is unlikely to be able to support a large increase in upper GI scope volumes. **Workforce:** Change in case mix would only impact the consultant/ non medical endoscopist workforce, planning time would be required to ensure the balance of demand was met by the right mix of consultants and or non medical endoscopists. **Finance:** cost per case would be charged aligned to the number of

		endoscopy procedures by type by Health Board.

10 Appraisal Results

10.1 Identifying the Preferred Option

Section 4 confirms that the preferred strategic solution Option 3 remains valid and there is an urgent need for the provision of additional orthopaedic, general surgery and diagnostic endoscopy capacity to support the needs of the current and future population within the WoS region.

10.1.1 Non Financial Benefits

Section 8.2.2 confirms that the top ranked option in terms of benefit is 'Option 3', scoring a total of 851 benefit points out of a maximum of 1000, more than double the benefit points of the second ranked option (option 2) scoring only 391 points out of a maximum of 1000 points.

10.1.2 Risk

Unsurprisingly option 1 do minimum was assessed as least risk, this is primarily due to the fact that this option does not involve significant design or construction risks and many of the risks assessed were simply not applicable. Option 2 had a risk score of 160 whereas Option 3 had a risk score of 185, recognising that both options involved design and construction risks, with option 2 scoring higher in the following risks:

- the available accommodation is not able to support the service model
- the design fails to meet the design assessment expectations

This reflects that fact that whilst option 2 would deliver additional theatre capacity, a number of additional potential improvements in service delivery will be limited given there is no change to the rest of the GJNH estate e.g. no opportunity to increase pre operative assessment, limited opportunity to improve admissions processes within existing surgical day unit area, etc…

Figure 60 outlines the Net present cost of options 2 and 3.

Option 3 has a lower NPV than noted in both Option 1 and 2 in addition to a lower EAC as noted in figure 42 under section 7.3, this is due to the reduced continuing cost reliance on Independent sector and therefore the appraisal scores lead to the selection of Option 3 as the Preferred Option.

Figure 60: Identification of the Preferred Option

	Option 1	Option 2	Option 3
Risk Assessment Score	25	160	185
Non Financial Benefits Score	351	391	851
Net Present Value	286,263,447	261,873,864	109,470,941
NPV per Benefit Point	£815,565	£669,754	£128,638
Revenue Costs	£49.4m	£48.5m	£38.6m

10.2 Flexibility of the Proposed Facility

The proposed facility has been designed to support the efficient and effective delivery of a high volume orthopaedic surgery, general surgery and endoscopy for WoS patients.

The five new build theatre will all have holding rooms, lay up prep rooms and ultra clean ventilation, sized to meet current SHBNs – whilst they could support other clinical specialties, it is very unlikely there will be a requirement to utilise these theatres for anything other than orthopaedic surgery in the foreseeable future given both the current number of patients waiting for surgery and the forecast increased demand for orthopaedic surgery in the future.

The two general surgery theatres are existing ophthalmology theatres, they could be used by another clinical specialty in future if necessary (as they have been in the past). As they are existing theatres (built several years ago) they are smaller than the requirements set out in the current SHBN guidance and do not have either anaesthetic rooms or holding bays - this therefore may limit their flexibility of use. Nevertheless these theatres could be used by anther surgical specialties in future if demand within the West of Scotland region necessitated a change of use.

The new facilities have been designed to be as future proofed as possible, with the surgical admissions unit located directly beneath theatres with sufficient lifts to transfer patients to and from theatre to improve patient flow and maximise clinical productivity.

In addition the additional clinic space created for orthopaedic outpatients and pre operative assessment of patients could be used by any clinical specialty in future if necessary.

11 Economic Appraisal Template

The Generic Economic Model (GEM) templates have been completed and are attached in Appendix A13.

Commercial Case

12 Commercial Case: Overview

The main purpose of the Commercial Case at OBC is to outline the proposed commercial arrangements and implications for the project. It will do this by responding, as appropriate, to the following questions:

	Question	Response
Procurement Strategy	What is the appropriate procurement route for the project?	Outline: • Procurement route selected • Compliance with EU Rules and Regulations • Procurement plan & timescales
Scope of Works & Services	What is the scope and content of the proposed commercial arrangement?	Outline: • Scope & content of included services • Scope of building works • Scope of other works
Risk Allocation	How will the risks be apportioned between public and independent sector?	Outline: • Risk allocation table
Payment Structure	How is payment to be made over the life span of the contract?	Outline: • Proposed payment structure • Other payment principles • Any non-standard arrangements
Contractual Arrangements	What are the main contractual arrangements?	Outline: • Type of contract proposed • Key contractual issues • Personnel implications

13 Determine the Procurement Strategy

	Question	Response
Procurement Strategy	What is the appropriate procurement route for the project?	Outline: • Procurement route selected • Compliance with EU Rules and Regulations • Procurement Plan & timescales

13.1 Overview

The SCIM requires that, as part of the OBC development process, Boards undertake an assessment to establish the procurement route for the project. This should consider the most likely route to deliver the best overall value for money and that should include consideration the potential for procuring capital investment projects through alternative financing arrangements under Public Independent Partnership (PPP). Where PPP is assessed as not offering the best value for money procurement route for delivering the project, a clear justification should be provided.

In the event that a traditional procurement is adopted there is a range of options available to the Board in delivering the project and the assessment should again consider which of these is likely to best support the delivery of the requirements and offer the best value for money.

The Board sought to make this assessment at an early stage and as such, in parallel with the development of the IA, formally considered the options for procuring the requirements in developing Phase 1 Ophthalmology Expansion.

13.2 Procurement Route

The Board sought to make this assessment at an early stage and as such, in parallel with the development of Phase 1 formally considered the options for procuring the expansion programme. Details were included within the Phase 1 Outline Business Case and approved by CIG on 28 June 2018.

It is therefore proposed to continue this and deliver the project in line with the guiding principles of the national Frameworks Scotland 2 Agreement which is managed by Health Facilities Scotland (HFS) on behalf of the Scottish Government Health Directorates.

The framework embraces the principles of collaborative working with the public and independent sectors working together in an effective and efficient manner. It is designed to deliver tangible performance

improvements due to repeat work being undertaken by the PSCP supply chains.

The Frameworks Scotland 2 initiative guide, developed by HFS for use on all projects, highlights that the framework has been established to achieve the following key benefits:

Earlier and faster delivery of projects

Certainty of time, cost and quality

Value for Money (VfM)

Well designed buildings procured with a positive collaborative working environment

The Framework Scotland 2 approach also has clear means for transferring risk during the construction phase, and also providing incentives to contractors to perform.

Having identified this as the preferred procurement route at an early stage the Board has been using Framework Scotland 2 to work with their selected Principal Supply Chain Partner (PSCP), Kier Construction, in developing the OBC. This has meant that the Board has been able to benefit from an integrated design team.

13.3 EU Rules and Regulations

By using the Frameworks Scotland 2 national framework which is an agreement with five Principal Supply Chain Partners (PSCPs) selected via an Official Journal of the European Union (OJEU) tender process for capital investment construction schemes across Scotland up to 2019, the Board do not have to undertake an OJEU procurement for this project.

13.4 Procurement Plan

The procurement plan follows the designated Frameworks Scotland 2 procurement route which is managed by Health Facilities Scotland (HFS). The project will be delivered through the following stages:

Stage 1 – Outline Business Case (Frameworks Scotland 2 Stage 2)

Stage 2 – Full Business Case (Frameworks Scotland 2 Stage 3)

Stage 3 – Construction (Frameworks Scotland 2 Stage 4)

Kier Construction will enter into an individual stage specific contract with NHS GJ at the beginning of each stage of the scheme. Subject to agreement of the Outline Business Case (OBC), the implementation milestones can be seen in Figure 71. The full project plan is outlined in Appendix A4.

13.5 External Advisor Procurement

As with Phase 1, the Board have chosen to adopt the national Frameworks Scotland 2 Agreement for

consultants to support the Programme Team and have appointed Aecom as Project Manager, Joint Cost Advisor & Supervisor and Thomson Gray as CDM Advisor. Further appointments will be made as the project progresses i.e. Clerk of Works services. These appointments will be delivered through the following stages:

Stage 1 – Outline Business Case (Frameworks Scotland 2 Stage 2)

Stage 2 – Full Business Case (Frameworks Scotland 2 Stage 3)

Stage 3 – Construction (Frameworks Scotland 2 Stage 4)

Aecom & Thomson Gray will enter into an individual stage specific contracts with NHS GJ at the beginning of each stage of the scheme for Project Manager, Joint Cost Advisor, Supervisor & CDM Advisor services.

13.6 Conclusion

The Board sought to establish the optimal procurement route for the proposed developments at an early stage in the capital investment process.

Having considered a range of options, the Board determined that the use of traditional capital finance offers the best overall value for money.

The Board have chosen to continue with Kier Construction as its PSCP utilising the guiding principles of the national Frameworks Scotland 2 Agreement which is managed by Health Facilities Scotland.

14 Scope and Content of Proposed Commercial Arrangements

	Question	Response
Scope of Works and Services	What is the scope and content of the proposed commercial arrangements?	Outline: • Scope & content of included services • Scope of building works • Scope of other works

14.1 Scope of Services

The products and services under contract are for a single point deliverer. This offers a procurement vehicle with an integrated supply chain for the delivery of design, manufacture, construction and commissioning of the proposed Phase 2 Expansion development. It is proposed that the facility will be delivered by Kier Construction under the Frameworks Scotland 2 Agreement, NEC 3 Engineering and Construction Contract Option C: Target Cost with Activity Schedule. This delivery methodology will provide the following benefits:

- completion of the scheme to the standard and functionality that meets the requirements set out in the contract
- Value for Money (VfM), not only in the initial capital cost, but also for the whole life costs through the application of value management principles
- certainty of delivery in terms of time and cost
- consistent delivery in terms of quality in both design and construction
- introduction of continuous improvement through collaborative working and the adoption of benchmarking and performance management measures
- improved management of risk
- optimised delivery of sustainable development

The project will be delivered through the following stages:

Stage 1 – Outline Business Case (Frameworks Scotland 2 Stage 2)

Stage 2 – Full Business Case (Frameworks Scotland 2 Stage 3)

Stage 3 – Construction (Frameworks Scotland 2 Stage 4)

Kier Construction will enter into an individual stage specific contract with NHS GJ at the beginning of each stage of the scheme.

14.2 Scope of building works

14.2.1 NDAP

The Board has engaged with Health Facilities Scotland and Architecture & Design Scotland in line with the NHSScotland Design Assessment Process (NDAP) having submitted design information and participated in both an AEDET Review and Early OBC Review to assess the progressing OBC design.

14.2.2 AEDET

The OBC AEDET workshop was undertaken on 21st August 2019, facilitated by Susan Grant of HFS. The summary of the workshop can be seen below:

Note this is provisional further stakeholder input will be added on 20th Sept following the stakeholder workshop

A further AEDET workshop will be undertaken at Full Business Case stage, but it is clear from the summary presented that progress has been made towards the Target Score.

At this OBC stage a number of scores are affected by non- completion of scoring within the section due to the immaturity of the design, rendering certain statements unable to be scored. This is most notable in the Construction and Performance sections.

The Health Facilities Scotland and Architecture & Design Scotland Assessment Response confirms that the submitted project information is of a suitable standard to be supported subject to a number of Essential and Advisory Recommendations.

14.2.3 BREEAM

The PSCP has engaged Hulley & Kirkwood (H&K) as the BREEAM Assessor for the project and a BREEAM Pre-Assessment review was carried out on in August 2019.

H&K has developed a bespoke BREEAM tracker document. This document provides a more intuitive mechanism to evaluate, monitor and predict the BREEAM scoring. The tracker allows credit headings to be allocated to appropriate members of the design team and allows credits to be categorised in terms of risk, cost, value and difficulty.

Credits within the checklist have been broken down into four distinct risk categories:

- Anticipated Credits – Low risk, best value BREEAM Credits which form the basis of best practice design and which benefit the overall design with limited additional cost.
- Target A Potential Credits - Medium risk, technically challenging credits above best practice design which have implications on project cost, procurement strategy and site space requirements.
- Target B Potential Credits - These credits have high associated risk, due to uncertainty about aspects which are to be assessed or likely to be out of the control of the design team. These credits cannot be guaranteed.
- Unlikely credits - credits which are deemed unobtainable/unlikely due to the nature of the site, the nature of the building operation or due to the project scope.

The potential score currently sits at 56.64% Very Good, however this does include11.94% of higher risk Target B credits. A copy of the BREEAM objectives report is included in Appendix A16.

14.2.4 BIM

The use of Building Information Modelling (BIM) creates a collaborative working environment for the project, with the full team sharing information through the Common Data Environment (CDE).

NHS GJ Hospital Expansion Programme Phase 2 has a requirement to achieve BIM Level 2 maturity and therefore, as well as all of the relevant BIM software being utilised, the full team will ensure they align to the BIM Execution Plan (BEP) and all associated BIM Protocols, Guidance and Standards set for the project in accordance with the Employers Information Requirements (EIR) and underlying principles of 1192 series of standards and specifications. As part of the BIM process the team will also assist NHS GJ and their Estates Team to fully define the scope of any project specific enhanced BIM handover requirements.

Specific details of the NHS GJ BIM strategy and implementation are detailed in the project BIM Execution Plan (BEP) and associated appendices.

14.3 Scope of other works

A separate exercise will be undertaken to procure the equipment required to ensure effective use of the new Facilities and this will be indentified from a combination of the itemised individual room data sheets augmented by equipment currently used as standard for current service provision that are not included within the room data sheets.

This overall listing will be subject to review and identification of all existing equipment available to transfer to the new Facility. All items identified for transfer will be removed from the overall list of requirements to leave an exact list of items requiring to be procured.

This list will be reviewed and a procurement strategy developed to identify the route to market for each specific item / group of items. In accordance with the NHS Scotland Elective Programme Collaboration Paper (31st October 2017) where feasible and practical a collaborative approach with other planned elective sites for the procurement of high volume or high cost items will be considered.

The procurement strategy for each item / group of items will provide detail of the chosen route to market reflecting:-

- The overall value of the proposed procurement exercise,
- The GJNH Standing Financial Instructions,
- The availability of National Procurement Scotland Framework Agreements.
- The requirement to advertised in OJEU (Official Journal of the European Union) where the proposed contract value for supplies and services is above the current financial threshold £118,113 excluding Vat

as detailed in the Procurement Reform (Scotland) Act 2014 (latest revision 1st January 2018).

15 Risk Allocation

	Question	Response
Risk Allocation	How will the risks be apportioned between public and independent sector?	Outline: • Risk allocation table

15.1 Key Principles and Potential Risk Transfer

This section provides an assessment of how the associated risks might be apportioned between the Board and the Principal Supply Chain Partner. It also outlines the process for identifying, assessing and apportioning the project specific risks.

The general principle is to ensure that risks should be passed to “the party best able to manage them”, subject to Value for Money (VfM).

The table outlines the allocation of responsibility for key risk areas:

15.2 Risk Allocation Table

Figure 61: Risk Allocation

Risk Category	Potential allocation		
	NHS GJ	PSCP	Shared
Design Risk	10%	90%	
Construction & Development Risk	25%	75%	
Transition & Implementation Risk	90%	10%	
Availability & Performance Risk	20%	80%	
Operating Risk			
Variable of Revenue Risk			
Termination Risks	50%	50%	

Technology & Obsolescence Risks	□		
Control Risks	25%	75%	□
Residual Value Risks	□		
Financing Risks	□		
Legislative Risks	10%	90%	□
Other Project Risks	50%	50%	□

The project delivery risks are identified in a master Risk Register which is maintained by the Board Programme Team. The Risk Register has been developed using the NHS GJ template and this will be transferred to the HFS template for costing during FBC stage. A risk workshop was held in July 2019 to review the register created at the Initial Agreement Stage and consider changes to risks captured then and any additional new risks. This was attended by both the Board and PSCP with risks identified, quantified and allocated to the party best placed to manage them.

The PSCP maintain a detailed risk register separately with full details of their mitigations both current and planned. The PSCP provides monthly inputs to the Board Programme Team who also meet monthly to revise the master register which allows any shared risks on the master register to be updated accordingly and then reported to the Programme Steering Group and Board. Regular reports to the Programme Board indicate on a simple matrix the changes to the Risk Register, ensuring all allocations of risk can be traced easily for audit purposes. Where there is movement of substantial amounts of risk allocation shown on this matrix, further breakdown to this risk allowance will be shown and submitted on supporting sheets. Meetings to specifically review risk can be called by either the Board Programme Team or the PSCP. The risks to be considered include both delivery risk and operational risks.

16 Payment Structure

	Question	Response
Charging Mechanism	How is payment to be made over the life span of the contract?	Outline: • Proposed payment structure • Non-standard arrangements • Other payment principles

16.1 Proposed Payment Structure

The National Framework NEC3 Engineering and Construction Contract Option C Target Cost with Activity Schedule utilises an auditable open book approach to quantify and manage payment.

At the pre-construction stages, payment is based on a fee forecast schedule. This is intrinsically linked to an agreed programme and set of deliverables and is based on hours expended multiplied by the Framework agreed rates. The schedule is supported by timesheets along with ancillary cost payments such as surveys. The incurring and payment of professional fees is managed throughout this period by the Board and its advisors on a monthly basis.

The PSCP and its supply chain members commercial rates and profit levels for duties undertaken during each of the pre-construction Business Case development stages have been agreed as part of the framework selection process.

It is envisaged that the Target Cost for the construction will be established during the FBC development phase, with payment based on accounting ledger cost from the PSCP. Payments are checked and verified through the Joint Cost Advisor.

17 Contractual Arrangements

	Question	Response
Contractual Arrangements	What are the main contractual arrangements?	Outline: • Type of contract • Key contractual issues • Personnel implications

17.1 Type of Contract

It is proposed that the facility will be delivered by Kier Construction under the Frameworks Scotland 2 Agreement, NEC 3 Engineering and Construction Contract Option C: Target Cost with Activity Schedule.

17.2 Key Contractual Issues

A template contract has been prepared for use on Frameworks Scotland 2 based on the options contained within the NEC3 Engineering and Construction Contract, Option C: Target contract with activity schedule June 2005 edition (published by NEC, a division of Thomas Telford Limited) with amendments dated June 2006, September 2011 and any subsequent amendments. This has been adopted for use as the basis of all Frameworks Scotland 2 project specific contract documents. The scheme development is incorporated into the Contract by means of detailed requirements in the Works Information and establishing a realistic programme for execution – the Accepted Programme.

The style of Frameworks Scotland and the “scheme contract“ promotes the use of particular project management techniques. These are also applied to formulate the Target Total of Prices.

An overall contract is entered into at commencement of the PSCPs appointment following agreement of a Priced Activity Schedule and Accepted Programme.

A number of alterations have been made to the standard contract in order to tailor it to the requirements of Framework Scotland 2. Key alterations include:

- Cash flow forecasts regularly updated by the PSCP and related to the programme (from the NHS Client’s perspective providing a positive basis for finance planning)
- Payment of accrued costs to the supply chain
- Gain share potential for Client and the PSCP (but overspend of the final target is funded by the PSCP)

- An improved definition of Defined Cost Stage 1 – Outline Business Case

Appointments made have been done so through Frameworks Scotland 2 and the utilisation of standard contractual documentation supplied by Health Facilities Scotland. Contained within these documents for both PSCs & PSCPs is a defined scope of service for each role and associated activity schedules. This information provides clarity on the roles responsibilities and generally the output required from each team member at each stage of the project.

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17.3 Personnel Implications

It is anticipated that TUPE (Transfer of Undertaking and Protection of Employee) will not apply to this investment.

Financial Case

18 Financial Case: Introduction

18.1 Overview

NHS GJ continues to deliver on its financial targets to remain within both Revenue Resource Limits (RRL) and Capital Resource limits (CRL), which includes a challenging efficiency savings programme. The current forecast for financial year 2019/20 is a breakeven position. The Board is on plan to achieve all financial targets for financial year 2019/20 with the success of this due to a focus on redesign and innovation which is pivotal to support the delivery of this expansion.

This financial case will detail all the revenue expenditure and funding modelled in relation to each of the three short-listed options and the affordability of the preferred option on the basis of the financial case and funding basis for both Capital and Revenue terms.

Within the financial case analysis and specifically for the recurring revenue position avoidance of independent sector providers to cover the current activity gap is a key point in the financial affordability of the preferred option.

Financial Case		
	Key Steps	**Outcomes for OBC**
1.	Prepare the financial model	Detailed narrative & summary information on key inputs to financial model.
2.	Review capital & revenue financed impact	Completed cost template & supporting information for capital or revenue financed project.
3.	Assess affordability	Statement of affordability and explanation of any funding gaps.
4.	Confirm stakeholder support	Duly signed letter(s) of stakeholder support.

18.2 Focus on the financial case

The annual revenue and Capital costs have been summarised below for the preferred option – Option 3

Figure 62: Capital Build costs

Element	Option 3
	£
Construction	34,504,224
Refurb	7,941,425
Kiers Design	2,553,060
Surveys	364.208
Cost Advisor/Project Manager	1,669,209
Supervisor/CDMA	-
Contingency/Inflation	5,573,047
Unrecoverable VAT	10,187,192
Optimism Bias	4,663,582
Total	**67,455,947**

The capital costs included above have been included in the Boards strategic finance plan over the three year construction period.

Figure 63: Recurring Revenue costs

	Option 3	
	New Build	
Options Revenue Category	**6 Theatres by 2035**	**Total Cost per case**
	£	**£**
Year 1 (2020/21) Pump priming costs	1,362,780	Incl. In Line below
Total Direct Additional Staffing Cost (Year 2021/22 to 2034/35)	18,643,900	£1,475
Total Additional Supplies Costs (incl. Overheads)	15,293,997	£1,128
Heat, Light & Power	502,768	£37

Total Additional Cost	**35,803,445**	**£2,640**
Depreciation	2,849,809	£210
Net Total cost	**37,387,869**	**£2,850**
Independent Sector use on current capacity shortfall	N/A	
Net Additional cost	**N/A**	

The recurring revenue costs for the options are compiled on the basis of the following:

- Salary costs are applicable for 2019/20 pay scales and therefore are now reflective of the last 2 years of the 3-year Scottish Government pay policy at circa 5.4% in addition to the recent 6% superannuation increase implemented from April 2019.

- The financial modelling predicates recruitment to all workforce roles identified but in some service areas this is proving increasingly difficult and therefore may impact on payroll cost out-turn in areas such as General Surgery consultant roles.

- Supplies costs are on the basis of the Golden Jubilee current marginal tariff rate for Orthopaedic, Endoscopy and General Surgery by identified procedure and are at 2019/20 cost base.

  We can see from the recurring revenue table that the cost per case in Option 1 equates to £3,641 and for option 3 this decreases to £2,850 and therefore Option 3 reflects overall economies of scale.

The revenue financial plan is predicated on the Golden Jubilee existing funding model and the 3-year financial plan for 2019/20 to 2021/22 included forecast revenue and funding implications on the basis of the IA. Future financial planning for revenue and funding will reflect outcome from the OBC and final FBC values.

19 Preparing the Financial Model

Option 3: Refurbish existing NHS GJ facilities and create new build accommodation to provide all additional activity within Orthopaedics, general surgery and diagnostic endoscopy

The financial model reflects these key differences on costs as shown in the table below;

- Option 3 – There is a noted increase in the Staffing support costs from £17.05m in the IA to £20m in the OBC which is mainly associated with the increased payroll based costs directly related to the last two financial years of the Scottish Government 3-year pay policy introduced from April 2018 and therefore 2 full financial year cost implications of circa 5.6% applied. This is in addition to the Scottish Government supported superannuation 6% increase implemented from April 2019. Both these national changes have increased the payroll support cost from the IA by £1.9m combined.
  The remaining £1m increase noted is due to the detailed workforce modelling calculated on the agreed service model. As part of the IA financial appraisal it was highlighted that as the service model position has not yet been agreed the ward and outpatient costs were high level at that stage particularly around General Surgery however these will be updated with more detail and model clarity by Full business case.
  Also of note in comparing the Phase 2 IA is that the total revenue resource implications (excl. depreciation) totalled £35.3m and as shown above the OBC revenue resource requirement (excl. depreciation) is now £35.8m and therefore an increase of only £0.5m before depreciation.
  Depreciation was not detailed at IA stage revenue resource as the detailed phasing analysis to allow completion was not yet in place.

Key Information / Assumption	Associated Costs	Comments
Operating pay costs:		
Pump priming staffing	£1.363m	Pump priming staff prior to implementation is required to ensure appropriate recruitment, training and service set-up in an expansion at such a significant level.
Development Additional Staffing	£0.907m	Based on detailed workforce modelling provided for all service areas including support and administration services as advised by service managers and reviewed by project team and senior management team. This has been applied in a phase approach over the life of the

		expansion in line with activity.
Operating non-pay costs Heat, Light & Power Depreciation	£0.503m £1.584m	Unlike existing GJ hospital capacity expansions this case presents the associated costs increase for a New build project and all the associated operational supplies and utility costs associated with this type of new unit. Depreciation for the building is based on the life provided by the valuers which is 40 years. Depreciation for equipment has been calculated in line with the Boards policy over 10 years.

- Property lifecycle costs – The Capital property lifecycle assume the cost of replacing equipment in line with the 10-year life. The maintenance cost of the new build have been assumed as part of the recurring revenue resources.

- Inflation – Not applied fo revenue costs at this point in the business case, all costs are at 2019/20 base rates. This will be managed through agreed Service Level Agreement uplifts with WoS Health Boards and SG as part of routine financial planning process in addition to efficiencies detailed in section 7.4.6.

- Taxation – The only element of tax that the Board will be eligible for are VAT, all non-recoverable VAT has been included in this analysis.

- Proposed method of capital financing and any associated charges – It has been assumed that all capital and equipment will be financed via traditional funding routes with funds being provided by SGHSCD and specifically associated with the Waiting Times Improvement plan identified funding.

20 Capital and Revenue Financed Impact

20.1 Summary of conventional capital costs and funding requirements

The impact of the conventional capital costs and associated funding are summarised in Figure 64.

Figure 64: Impact of the conventional capital costs and associated funding

		Funding			Change to OBC (*FBC only*)	
Capital Cost	Total £000s	Existing Resources £000s	Partner contributions £000s	SG Additional Funding Requirement £000s	Total at OBC £000s	Movement from OBC £000s
Building & Engineering works	51,965			51,965		
Location adjustment						
Quantified Construction Risk						
Additional itemised costs						
Total Construction costs	51,965	0	0	51,965	0	0
Site acquisition						
Other enabling works						
Additional itemised costs						
Total other construction related costs	0	0	0	0	0	0
Furniture						
IT						
Medical Equipment	10,667			10,667		
Additional itemised costs						
Total furniture and equipment	10,667	0	0	10,667	0	0
Additional Quantified Risk						
Total estimated cost before VAT and fees	62,632	0	0	62,632		
VAT	11,291			11,291		
Professional Fees	1,669			1,669		
Total estimated cost including VAT and fees but before optimism bias	75,592	0	0	75,592		
Allowance for optimism bias	4,664			4,664		
Total estimated cost	80,256	0	0	80,256		

Profile of capital expenditure

Year	Total Capital Spend £000s	Existing Resources £000s	Partner contributions £000s	SG Additional Funding Requirement £000s	Total at OBC £000s	Movement from OBC £000s
Year 1	67					
Year 2	6890					
Year 3	11547					
Year 4	46590					
Year 5	10498					
additional equipment will be purchased as each additional theatre opens						
Total	75592					

21 Assessing Affordability

21.1 A statement of Affordability

The capital funding for the elective centres is ring-fenced Waiting Times Improvement capital monies from the Scottish Government for the creation of a number of elective treatment facilities in Scotland . The Board's element for the building of the elective centres is reflected in the Board's financial plan submitted to the SGHSCD. As noted in the relevant section there is one item that is below the line expenditure at present as this is not considered in the IA and have only been identified due to changes in external processes. The capital funding identified above is in line with the IA with only an immaterial movement of £136k increase.

The cost for equipment which is critical for the operation of the elective centres is included in the business case.

The revenue position for preferred option, Option 3, and associated Income analysis is summarised in Figure 65.

Figure 65: Revenue Costs and Funding – summary

Revenue costs Summary	Option 3 (by 2035) - £'m
Net Additional cost	**38.6**
Income – Scottish Government	**22.8**
Income – WoS Boards	**15.8**

The revenue funding assumptions are in line with the Golden Jubilee funding model with staff costs supported by Scottish Government and marginal supplies costs supported by the WoS Boards. It is assumed the revenue funding to support this will be funded by the significant reduction in the independent sector as described in detail within section 7.4.1.

Within the financial model there are recognised opportunities and efficiencies not yet fully recognised within the costs which allow for further costs review and improve value for money and subsequently the affordability of the preferred option. The main areas of consideration are detailed within section 7.4.6 and each of these

will be more clearly defined within the Full Business Case.

As neither an increase in costs associated with pay related or inflation policies post 2019/20 are incorporated at this point within the financial model it is expected that any increase associated with these would be manageable as a result of those efficiencies noted in section 7.4.6 and other innovative approaches to design and services or as a direct result of agreed inflationary uplifts between NHS Boards Service Level agreements and Scottish Government as part of the routine financial planning process.

21.2 Closing the Affordability gaps

As described previously in section 21.1 it is assumed that the revenue funding to support this business case will be realised from the reduction in independent sector use within West of Scotland Boards. This is noted in detail within section 7.4.1 where Option 1 – Do minimum centres around capacity shortfall is modelled 100% Independent sector use to cover the gap. This is based on the current Independent commissioning tariff cost per case derived from the Golden Jubilee Outsourcing capacity allocation document and on negotiated Independent provider catalogue prices. Annual forecast Demand for WoS Boards is based on the forecast capacity gap by specialty and this represents Option 1 as an additional cost to WoS Health Boards of £12m from Independent sector reliance in direct comparison to Option 3 – preferred option.

On the basis of the confirmed Independent sector data in addition to the existing GJ funding model (of staff costs supported by Scottish Government and supplies costs via marginal tariffs within WoS Boards service level agreements) no affordability gap is identified within the Option 3 preferred option.

The Board will continue to manage costs within the business case in line with the financial model as set out in this OBC and identify ways in which to release efficiencies to offset any costs increase that may arise from the redesign and innovative approaches fundamental to this and all prior expansions implemented by the Board.

22 Confirming Stakeholder (s) Support

This section will be finalised once the formal engagement with Stakeholders has taken place on 20th September post OBC completion and circulation to the stakeholder group

22.1.1 Patients, Staff and Third Sector Representatives

In developing the OBC, there was early engagement with the Scottish Health Council. Following advice from Scottish Government and after discussion with SHC, as this proposal is about delivering an expansion of an existing service over a number of years, proportionate engagement was considered appropriate to capture patients', carers' and the public's views and experiences. Since early 2017, there has been a high level of engagement with patients, staff and 3rd sector organisations for both phase 1 and phase 2. Appendix A10 provides a list of engagement carried out to date.

Stakeholders (patients, third sector representatives and staff) participated in two workshops during the development of this OBC, the nonfinancial benefits workshop held in May 2019 and an OBC workshop held in September 2019. The workshop participants are listed within section 8 of this OBC. Both events were also attended by Scottish Health Council.

The key messages from the workshops were

Feedback to be inserted following formal meeting on 20th September 2019.

22.1.2 Orthopaedic Patient Survey

In addition wider patient feedback has been sought as the project has moved forward, a large patient survey was carried out with a total of 897 responses. The feedback has been collated and is summarised in section 25.6.

22.1.3 West of Scotland Regional Engagement

To support the development of the IA and OBC, a West of Scotland Regional Engagement Group was established in January 2017. During the development of the IA and OBC there have been ten meetings with the West of Scotland Engagement Group, the most recent of which being held in September 2019. The key messages from the WoS Engagement Group are as follows:

To be insert following meeting with WoS planning leads

Opportunities identified and discussed as part of this OBC development included:

To be inserted following meeting with WoS planning leads

The concerns raised during discussion and development of the OBC included:

Insert following meeting with WoS planning leads

The OBC document was circulated to the West of Scotland Engagement Group, West of Scotland Directors of Finance and to the National Elective Centres Programme Board members on 17th September 2019. In addition the OBC was shared with The Health and Social Care Delivery Partnership Programme Board on 18th September 2019.

To be inserted following feedback when received from region

22.1.4 NHS GJ Approvals

Text to be inserted following approval meetings

Management Case

23 Management Case: Overview

The Management Case will demonstrate that NHS GJ is ready and capable of delivering the project successfully.

	Question	Response
Project Management	What are the project management arrangements are in place?	Outline: • Reporting structure & governance arrangements • Key roles & responsibilities • Project recruitment needs • Project plan
Change Management	What change management arrangements are being planned?	Outline, where appropriate: • Operational & service change plans • Facilities change plan • Stakeholder engagement & communication plan
Benefits Realisation	How will the project's benefits be realised?	Outline: • Updated benefits register • Full benefits realisation plan
Risk Management	How are the project risks being managed?	Outline: • Updated risk register • Risk control measures • Governance arrangements
Commissioning	What commissioning arrangements are being planned?	Outline: • Reporting structure aligned to main project structure • Person dedicated to leading this process • Key stages • Resource requirements
Project Evaluation	How will the success of the project be assessed?	Outline: • Person dedicated to leading this process • Key stages • Resource requirements

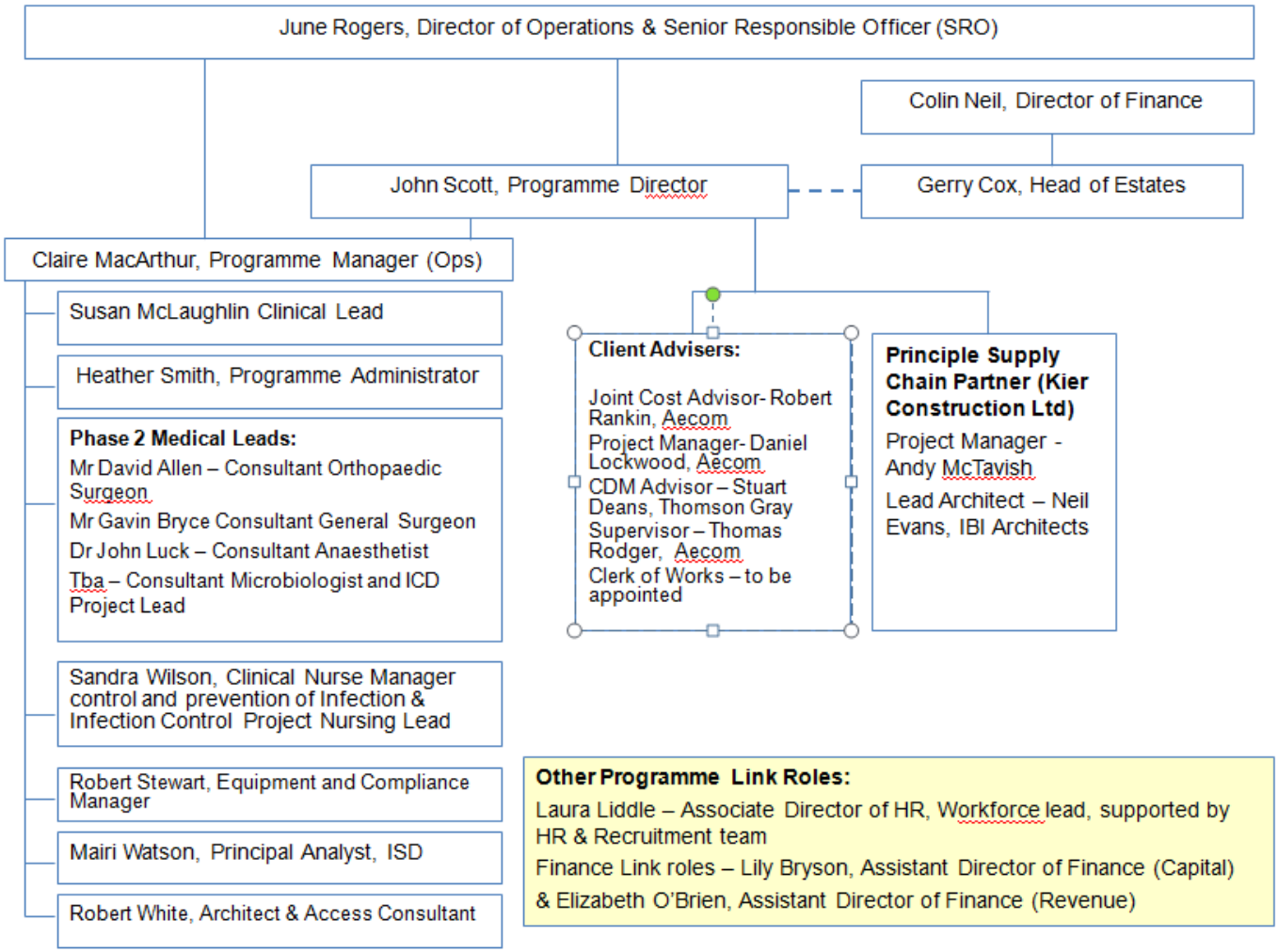
24 Project Management Proposals

	Question	Response
Project Management	What project management arrangements are in place?	Outline: • Reporting structure & governance arrangements • Key roles & responsibilities • Project recruitment needs • Project plan

24.1 Reporting Structure

Figure 66 outlines the NHS GJ Organisational structure for project 2: Orthopaedic, General Surgery and Endoscopy Expansion.

Figure 66: Project 2 Reporting Structure



24.2 Governance Arrangements

Figure 67 outlines the wider programme governance structure both within the NHS GJ and the wider governance within the WoS region and within the context of the National Elective Centres programme.

The Hospital expansion programme will be managed by a Programme Board chaired by Jann Gardner, Chief Executive (NHS GJ), supported by June Rogers Director of Operations and Senior Responsible Officer. A West Regional Engagement Group has been established to ensure continual engagement with the West Region throughout the development of both Project 1 Ophthalmology and Project 2 Orthopaedics, and other surgical specialties. The Programme Board membership is set out within Figure 69 and includes representatives of the NHS GJ senior management team, NHS GJ Chairman, the director of regional planning, the Programme Director of the National Elective Centres Programme, Strategic Director, West Dunbartonshire Council, and Vice Principal Operations, West College Scotland.

Figure 67: Overarching Programme Governance Structure for Project 1 and Project 2

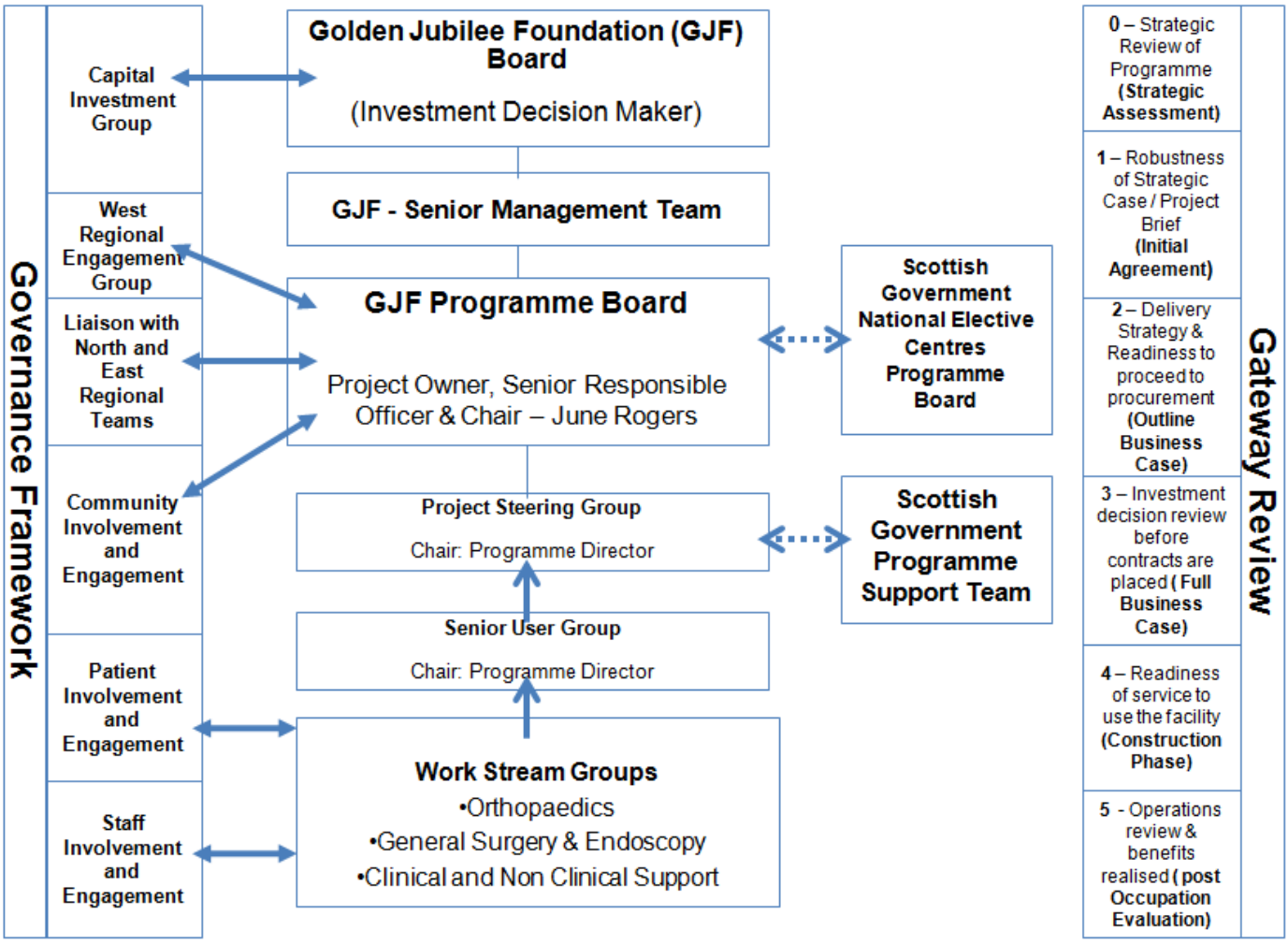


Figure 68: Governance Arrangements for Project 2

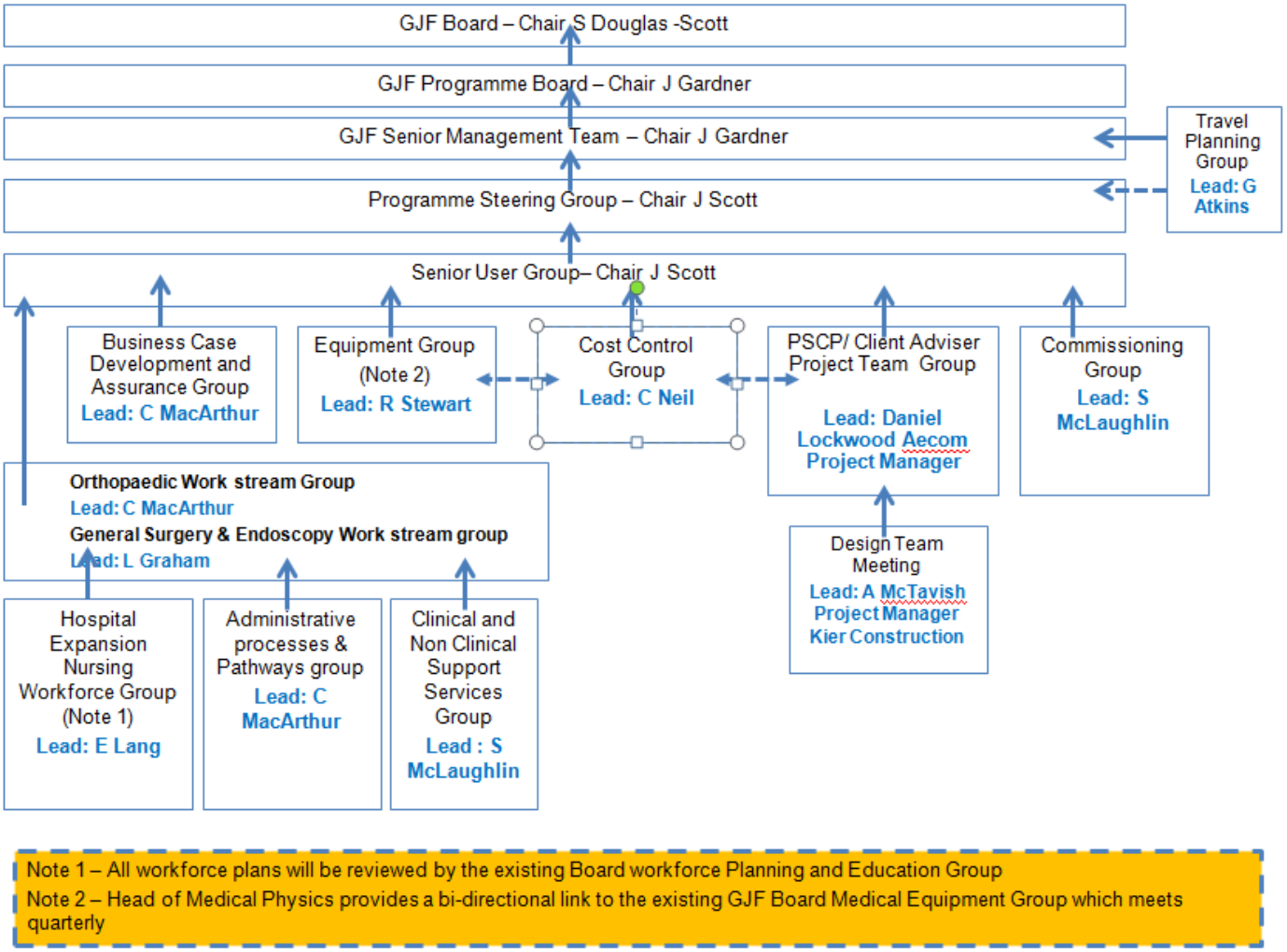


Figure 69: Programme Board Membership

Role	Named Person
Chair of Programme Board and Chief Executive	Jann Gardner
Senior Responsible Officer & Director of Operations	June Rogers
Chair NHS GJ	Susan Douglas-Scott
Director of Finance	Colin Neil
Nurse Director	Anne Marie Cavanagh
Director of Global Development & Strategic Partnerships	Angela Harkness
Employee Director	Jane Christie-Flight
Interim Medical Director	Alistair MacFie
Performance Manager, Scottish Government	Margaret Duncan
Head of Clinical Governance	Laura Langan

Programme Director, National Elective Centres	Margaret Sherwood
NHS GJ Programme Director	John Scott
Head of Corporate Affairs	Sandie Scott
Programme Manager, Ops	Claire MacArthur
Vice Principal, Operations, West College Scotland	David Alexander
Head of Estates	Gerry Cox
Director of Regional Planning, West of Scotland	Sharon Adamson
Associate Operations Director, Surgical Division	Lynn Graham
Associate Operations Director, RNM	Lynne Ayton
Executive Director – Infrastructure and Regeneration, West Dunbartonshire Council	Richard Cairns
Head of eHealth	Sally Smith
Director of Quality, Innovation & People	Gareth Adkins

24.3 Key Roles and Responsibilities

The **Senior Responsible Officer** is June Rogers, the Board Director of Operations. June leads on communication with the West of Scotland Health Boards and the West of Scotland Director of Planning. June has extensive experience of managing project and managing clinical services. June has direct experience of delivering many previous service expansions at the NHS GJ and was also involved in the creation of the WoS Heart and Lung Centre in 2007. Through this experience June is able to provide expertise related to the projects development, governance and stakeholder management as well as having in depth knowledge of service models and performance.

The **Programme Director** is John Scott, John has been appointed specifically to manage the delivery of the hospital expansion programme. John has significant experience of delivering capital projects having previously worked as Head of Capital Planning within NHS Ayrshire and Arran. John has direct experience of delivering large scale capital projects having been Programme Director for a new £50m Mental Health & Community Hospital in Irvine which was completed in 2016.John will be responsible for directly managing the Kier Construction PSCP team and the Client Advisors.

The **Programme Manager** is Claire MacArthur, Claire has been seconded from her substantive role as operations manager within the surgical division at NHS GJ to support the hospital expansion programme. Claire is an experienced senior manager with extensive experience of working with the acute hospital sector. Claire's key skills and experience include project management, stakeholder management, planning and managing clinical services, leading service reviews/ improvement projects and developing strategies, workforce plans and business cases. Claire directly manages the NHS GJ operational programme team.

The **Clinical Lead** for the programme is Susan McLaughlin, Susan has been seconded from her clinical

educator role and leads the ophthalmology work stream group developing the clinical model and supporting workforce training and education plans and with support from the wider team will lead on the commissioning process. Susan has significant senior nursing experience her key skills include stakeholder management and facilitation, leading quality improvement projects, developing, planning and facilitating national and local training and education for clinical and non clinical staff. Susan has recently completed the Scottish Improvement Leaders Programme.

June, John, Claire and Susan have been involved with the project from the outset so have a detailed understanding of the project objectives and the process of delivery. All have confirmed capacity to continue within their roles ensuring continuity of knowledge and the required skill set.

The NHS GJ programme team will be supported both internally and by those appointed as Independent Client Advisors (see Figure 70) and the Principal Supple Chain Partner. Further advice is available through NHS GJ's Head of Estates Gerry Cox, and the Aecom Joint Cost Advisor, Robert Rankin. This experience together with the identified in Figure 69 (Programme Board membership) demonstrates that the project structure contains the required skill set to successfully deliver the project.

Independent Client Advisors

Those appointed to support the overall hospital expansion programme are detailed in Figure 70 . Through the assessment and appointment process it has been demonstrated that those named have the required skills. Experience, expertise and capacity to deliver this project.

Figure 70: Independent Client Advisors

Role and Organisation	Named Lead
Project Manager, AECOM	Daniel Lockwood
Joint Cost Advisor, AECOM	Robert Rankin
CDM Advisor, Thomson Gray	Stuart Deans
Supervisor, AECOM	Thomas Rodger
Clerk of Works	To be appointed

24.4 Programme Recruitment Needs

NHS GJ has the required resource and individual capacity to ensure all key roles within the structure remain filled. The one post which has been difficult to recruit to is the role of the Consultant Microbiologist. NHS GJ

continue to work with Scottish Government to identify a solution to the provision of this expert advice in support of the project.

With the exception of the Lead Consultant Microbiologist it is not envisaged further external recruitment will be required for this project. Any further additional support will be provided within NHS GJ and from the confirmed client advisors.

The individuals identified under section 24.3 have been selected as they have the necessary skills and capabilities to assist the successful delivery of the project. Should any replacement of these individuals be required, NHS GJ recognise that any replacement will have to demonstrate sufficient knowledge and capabilities and provide confidence that no gap in resource ability occurs at any stage.

24.5 Project Plan and Key Milestones

A detailed project plan is in place and works are progressing in line with the plan. Key Milestones have been identified and works sequenced in order to complete design works for RIBA Stages 2 & 3, OBC and Planning submission. The project plan works in tandem with the stakeholder Engagement and Communication plan which is further outlined in Appendix A5.

The current project plan is included within Appendix A4.

The key project activities and milestones are outlined in Figure 71. It is important to note that to achieve he tight timescale it is anticipated the building will be completed and handed over in a phased manner as each level is completed. A more detailed plan outlining this approach will be developed as part of the FBC.

Figure 71: Key Project Activities and Milestones

Action	Responsibility	Date
Completion of OBC	Programme Team and SRO	11th Sept 2019
Approval of OBC by Programme Steering Group	Steering Group	17th Sept 2019
OBC shared with Regional and National Planning Groups and NHS GJ Senior Management Team	SRO	17th Sept 2019
Approval by NHS GJ Senior Management Team	Senior Management Team	w/c 17th Sept 2019
Approval of OBC by Expansion Programme Board	Programme Board	w/c 17th Sept 2019
Stakeholder workshop event		20th Sept 2019

Approval of NHS GJ Board	**NHS GJ Board**	**26th Sept 2019**
OBC Submission to CIG	Programme Board	26th Sept 2019
CIG OBC Approval	**CIG**	**8th Oct 2019**
Stage 3 Design Development Period	PSCP	Jun 19 – Dec 19
Market Testing Period	PSCP	Jul 19 to Feb 20
Planning Application Submission	PSCP	13th September 2019
Building Warrant Submission (1st stage)	PSCP	5th December 2019
Stage 3 Proposal Submission Date	PSCP	25th March 2020
FBC Submission to CIG	Programme Board	17th April 2020
CIG FBC Approval	CIG	18th May 2020
Instruction to progress to Construction Stage	NHS GJ Board	26th May 2020
Construction commence	PSCP	29th July 2020
Construction complete	PSCP	Phased completion commencing in December 2021
Commissioning Period	NHS GJ	To be completed in a phased way in line with the phased handover of the completed facility

24.5.1 BREEAM

As defined in the SCIM Guidance, 'The Scottish Capital Investment Manual requires that all new build above £2m are required to obtain a BREEAM Healthcare (or equivalent) 'Excellent' rating'. Following guidance sought from HFS, during the Stage 2 process, it has been established that HFS is willing to review the proposed BREEAM credits to be targeted for the facility, to enable a pragmatic approach to the design to be taken.

Hulley & Kirkwood (H&K) has been engaged as the BREEAM Assessor for the programme and a BREEAM Pre-Assessment review was carried out during August 2019. The potential score sits at 56.64% Very Good.

24.5.2 AEDET

A workshop for AEDET benchmarking took place in 21st August 2019 facilitated by HFS, ensuring challenge to the scheme and awareness of the AEDET design principles.

24.5.3 NDAP

A number of meetings have been held with Health Facilities Scotland (HFS) and Architecture & Design Scotland (A&DS) in March 2019 and August 2019. Having considered the information provided, HFS and

A&DS have assessed the project and consider that it is of a suitable standard to be supported and have made a number of recommendations.

The report in full including the recommendations can be seen in Appendix A12.

24.5.4 Site Investigation

The following site investigations & surveys were carried out by the PSCP during Stage 2:

- Detailed UXO Risk survey
- Intrusive ground investigations
- Underground gas monitoring
- Drainage survey
- Topography and GPR survey
- Ecology survey
- Chemical testing of remediated soil

24.5.5 Review of Progress Reporting

A regular Project Team meeting is held on a monthly basis chaired by the NHS GJ appointed Project Manager and attended by the Programme Director, this meeting will continue throughout the duration of the project. The agenda for this meeting requires progress reports from the PSCP, Project Manager, Supervisor, CDM Advisor and Joint Cost Advisor**.**

The appointed Project Manager also produces a monthly Red, Amber, Green (RAG) dashboard report based on a review of the PSCP report, progress monitored against the project programme and ongoing commercial review. This report forms the basis of the monthly progress update report to the programme Board.

24.5.6 Project Constraints

A specific constraint unique to the NHS GJ site is the co-location of the Scottish National Advanced Heart Failure Service (SNAHFS), patients within this group include patients who are awaiting or have undergone heart transplantation and are particularly vulnerable as they are immunocompromised. As the only centre undertaking Heart transplantation within Scotland it is essential the service is safeguarded during site investigations, ground works or periods of construction.

Numerous fungal outbreaks have occurred in healthcare settings and have been a serious threat to immunocompromised patients. Construction and renovation activities can cause serious dust contamination and disperse fungal spores and construction activity has been reported as an independent risk factor for invasive fungal infection. In published reports invasive aspergillosis has an overall case fatality rate of 58%.

To mitigate the risk to this patient group and other immunocompromised patients within the NHS GJ, the HAI SCRIBE process is integral to the design and construction elements of the expansion. During the construction phase, agreement, application and compliance monitoring of robust control measures is essential. To date when the site investigations were carried out patients were advised to access the hospital from the hotel entrance and avoid using the main hospital entrance which is adjacent to the development site for project 2 of the hospital expansion.

In addition to the construction of the new facility, there will be three strategic links from the new build to the existing hospital made at each level of the planned new build extension. These linkages will be within non clinical areas on level 1 and level 2, however within level 3 the links will be made into the live theatre environment. In addition there is a requirement for refurbishment of an area within the theatre department. Both the new build and refurbishment works will therefore have to be very carefully planned with expert input from infection control, microbiology, hospital estates experts and the PSCP. The organisation will undertake detailed HAIScribe (s) in advance of the various works (breakthroughs and refurbishment projects) ensuring there is expert input from the clinical and technical teams given these works will be taking place adjacent to live theatre environment.

The team will also seek to minimise any operational impact to services and patients during construction of the facility during this period. Where possible works may be undertaken out of hours, however there may be a requirement to temporarily relocate or review patient activity whilst the breakthroughs take place.

The planning and monitoring of this work will be carried out by the PSCP with full involvement and input from the NHS GJ clinical teams including expert advice from the lead infection control nurse, lead consultant microbiologist, and all medical teams and departments affected, including national services.

24.5.7 Resource Planning

NHS GJ have the required resource to support the delivery and implementation of this project. The clinical work stream groups are now well established with dedicated part time clinical leads supporting the continued design development process. The group have developed the clinical model of care and discussed and approved key performance assumptions including planned further service improvements.

24.6 Engagement with West Dunbartonshire Council

24.6.1 Planning Permission

The Project Team has been in regular dialogue with the Planning Department, throughout the Stage 2 design process. The proposed timing of the Planning Application has been discussed and it was agreed that further liaison would take place as the design progressed. It is anticipated that the Planning Application will be submitted during September 2019.

24.6.2 Building Warrant

The Project Team has been in dialogue with the Building Control Department, during the Stage 2 design

process. The programme for the application has been discussed and the probable requirement for staged applications for Building Warrants was identified as being highly likely due to the relatively short pre-construction period.

24.7 Gateway Review

Following completion of the OGC's two-stage Risk Potential Assessment (RPA) process, it was confirmed that the hospital expansion programme (phase 1 and phase 2) will follow a single Gateway review process. The first Gateway Review was carried out in January 2018.

The outcome of the review was a Delivery Confidence Assessment of Amber/Green (Successful delivery appears probable however constant attention will be needed to ensure risks do not materialise into major issues threatening delivery).

The report noted that Phase 1 of the Programme has been taken through a well-managed and effective clinical briefing and design development process. This has produced a stage 2 design that has excellent stakeholder support. The phase 2 project has followed the same process of clinical engagement and involvement from the clinical briefing to the subsequent design development process.

The Programme is managed by an experienced and competent client team, matched by equally well resourced PSCP (Principal Supply Chain Partner) team and good working relationships have been established.

A second Gateway Review is scheduled to take place in October 2019.

24.8 Conclusion

This section of the OBC shows that the NSH GJ have developed a robust project management framework outlining the project strategy and methodology based on best practice, the roles and responsibilities of key project members, the project communication and reporting arrangements and the project plan including key project milestones. The Full PSCP project plan for stage 2 and 3 is contained within Appendix A4.

25 Change Management Arrangements

	Question	Response
Change Management	What change management arrangements have been put in place?	Outline: • Operational & service change plan • Facilities change plan • Stakeholder engagement & communication plan

25.1 Operational and Service Change Plan

25.1.1 Expanding the Workforce to Support Additional Capacity

The project involves adding additional capacity to the existing service at the NHS GJ , it is important to note that the expansion is phased over a period of 15 years between 2020 and 2035. NHS GJ recognises that the key to success of the service expansion will be the development of a sustainable workforce plan that does not destabilise services within the existing hospitals in the West region. Section 2.5 sets out the proposed principles of the recruitment, training and workforce plan.

The preferred solution (option 3) requires 193.79 wte additional staff in the first year of opening - of which 105.55wte are additional nursing staff (bands 2, 3, 4, 5, 6, 7). By 2035 there is a requirement for 479.41wte additional staff of which 265.66wte additional nursing staff bands (bands 2, 3, 4, 5, 6, 7),

The national shortage of experienced registered and unregistered nurses is well documented, in order to successfully deliver the additional capacity NHS GJ propose to:

- NHS GJ will create 36.23 wte training posts in 2020/21 up to 1 year ahead of opening, providing the opportunity to recruit and train over 50% of the required theatre nursing workforce from newly qualified nurses and support them in achieving the theatre competencies ahead of opening in Dec 2021.

- from year one of opening onwards, NHS GJ plan to build on the already established NHS GJ branded theatre nurse ‘Training Academy’ approach, which has already successfully supported the many expansions in orthopaedic and ophthalmology theatre capacity, by further developing the Training Academy increasing the theatre nurse training posts

Figure 72 outlines the proposed size and skill mix within the pump prime resource one year ahead of opening and the ongoing commitment required every year thereafter to support the further expansion of services.

Figure 72: Proposed Additional Resource – Pump Prime Resource ahead of Year one Opening and Ongoing NHS GJ Training Academy Posts

Clinical Area	Band	1 year prior to opening	Ongoing Training Posts in Subsequent years
		Wte & Cost	Cost
Clinical Education	Band 6 Assistant Clinical educator Band 7 SVQ Assessor	1.0 wte 1.0 wte	No further investment required - existing posts continue
General surgery Theatres	**Various bands 2 to 6:** Band 2 nursing assistants, band 4 assistant scrub practitioners Band 5 RN/ ODP Anaesthetic nurses band 5 RN / ODP scrub nurses Band 6 Surgical First Assistants	5.26 wte	In future years there will be a requirement for additional training posts within theatre to support continual expansion of services. This will support newly qualified nurses and HCSW achieve the competencies required ahead of service expansion and avoid destabilising existing services within the region. This cost has not been included within the OBC cost as it is assumed this will be included within the separate NHS GJ training academy development
Orthopaedic theatres	**Various bands 2 to 5:** Band 2 nursing assistants band 4 assistant scrub practitioners Band 5 RN/ ODP Anaesthetic nurses band 5 RN / ODP scrub nurses	12.0 wte	
Post Anaesthetic Care Unit / Recovery	**Various bands 3 to 6:** Band 3 Senior Nursing Assistants Band 5 Staff Nurses Band 6 Charge Nurse	7.0 wte	
Endoscopy	**Various bands 3 to 5:** Band 3 senior nursing assistants band 5 RN scrub nurses Band 5 Recovery Practitioner Band 5 Anaesthetic Assistant	6.9 wte	
Clinical Support Services	Band 7 Advanced Practitioner Hand and Wrist Service Band 7 Surgical Care Practitioner Band 7 Echocardiographer Band 2 CSPD Technician	3.07 wte	It is predicted that a band 2 CSPD training post will be required
Total	**All Roles**	**36.23 wte £1.36m**	

25.1.2 Joint Recruitment of the Difficult to Fill Consultant Positions

NHS GJ propose to work closely with the other WoS Boards to fill the more difficult to recruit to consultant posts, by developing flexible more attractive joint consultant appointments supporting the delivery of sustainable services across the region. There is a specific need to focus on the joint appointment of consultant general surgeons to support both the general surgical and endoscopy programme and consultant anaesthetists. There has been engagement with the WoS Health Board throughout this process it is proposed this will continue to support the implementation of the workforce plan.

25.1.3 Non Medical Endoscopists

In addition to joint consultant general surgeon appointments NHS GJ will work with WoS Health Boards to seek support to develop non medical endoscopist roles. It is important to note that this can only be achieved when the consultant general surgeon workforce model is a more sustainable model with resident general surgeons. Within the OBC provision has been made to recruit up to three non medical endoscopists, the training period is typically 2 years, subject to access to sufficient training lists.

25.2 Workforce Planning Process

The workforce plan was developed by the senior nursing team and heads of department and subsequently reviewed against existing workforce profiles, (based on existing service provision within NHS GJ), and previous service expansions within NHS GJ. A multidisciplinary approach involving all key members of the clinical teams was taken to agree the required workforce profile and the posts required 1 year ahead of opening to support training of newly qualified staff and HCSW in achievement of competencies ahead of opening in Dec 2021.

The phased workforce requirements and workforce profile by financial year is outlined in more detail within Appendix A6.

25.3 Managing the Change Process

In order to support staff in the run up to the change a 12 month fixed term appointment will be made to a Change Manager post (0.80 wte). The non recurring cost of this role has been included within the business case commissioning costs. It is envisaged this role will be recruited to approx 10 months before opening and support staff pre during and post the commissioning period for a total time of 12 months.

The post holder will work with the wider NHS GJ learning and organisational development team lead on the people side of change and help prepare and support staff ahead of the planned expansion and commissioning of new facilities. Activities undertaken by the post holder and the wider Learning and Organisational Development team will include:

- Conducting impact analyses, assess change readiness and monitor readiness for change
- Identify resistance to change
- Develop a Change plan supporting an agreed change methodology. The plan has the opportunity to pull together other services that support the people side of change i.e. communication of change, HR etc
- Define and measure success metrics (linked to people and change) and monitor change progress
- Support delivery of key communication messaging with front line staff
- Training design and delivery i.e. specific change programme, skills development i.e. developing new teams, conflict management, managing challenging conversations,
- Develop / source range of change resources i.e. toolkit, action learning groups etc .

- Support the development of OD skills for managers
- Provide formal coaching at all levels

25.4 Facilities Change Plan

Engagement with Estates & Facilities services is underway. This process is being carried out in line with the Government Soft Landing Principles and led by the PSCP.

The PSCP has commenced the inception and briefing stage, establishing stakeholder requirements and strategies. Existing experience of mechanical, electrical and plumbing strategies and systems have been reviewed in detail generating a brief of preferred methodologies, systems and specifications. This review process has established design elements which will be stand alone for the new areas formed as well as those which will need to integrate into existing systems. Key items such as BMS, fire detection, CCTV and access control systems will all be integrated into existing infrastructure and existing operational policies.

Further design development based on the understanding gained is ongoing and design review will be undertaken through the FBC process. This process will include engagement with the established monthly Estates Meetings.

At pre-handover stage operators will be able to spend time gaining an understanding of interfaces and new systems and check that the output and functionality expected are provided.

Initial aftercare will be part of the service provided by Kier as PSCP. The exact timescale will be discussed and confirmed through the FBC and contract award processes along with any extended period in coordination with the long- term post occupancy evaluation process. It is expected that the PSCP team will retain a presence on site to deal with emerging issues, assist with understanding how systems are operating, measured, monitored and adjusted to ensure the facility meets the users' expectations and requirements.

25.5 Stakeholder Engagement and Communication Plan

The hospital expansion team have developed excellent links with the National Elective Programme Support Team and provide regular progress updates to the National Elective Centres Programme Board, in addition the team have close links with the recently established Scottish Access Collaborative Programme Board .

There is a specific Stakeholder Engagement and Communication Plan in place, approved by Project Programme Board, which includes information on the identification of stakeholders, key messages, timeline of communication activities, as well as methods of communication and engagement (Appendix A5).The objectives of the communications and engagement plan are:

- To raise awareness about service developments and expansion at NHS GJ
- To demonstrate to our key stakeholders the value we bring in supporting Boards across NHSScotland

- To raise awareness in key stakeholder groups of our positioning as an organisation in context with the elective care project, regional and national deliver plans

- Maximise the opportunities for engagement to ensure as wide a range of views as possible is sought at all stages of the project

- To support two way dialogue with our key stakeholders, ensuring key milestones and benefits are communicated effectively through a wide range of methods. We aim to create a collaborative working environment

- To utilise the two way dialogue with stakeholders to develop our plans and help shape our services by appropriately involving people and listening to feedback received

- To ensure those who have contributed to the expansion development see the impact of their contribution through meaningful feedback and are thanked for their input

The Plan is a live document and its ongoing review forms part of the Steering Group agenda, ensuring its contents are regularly reviewed and updated as required. This is not the only opportunity for review and change, this is a document that is shared with the core team and it is understood that it can be updated at any time through core team members awareness of any change.

25.6 Patient Feedback – Orthopaedic Patient Questionnaire

The orthopaedic service has now completed a patient feedback questionnaire which has been statistically significant with overall comparability. Since IA stage a further 800 questionnaires were sent to patients with 530 responses being received.

In total 897/1400 patients fed back their views on the service provided giving an overall response rate of 64%.

96% of patients agreed or strongly agreed that they would recommend the service to their friends and family and 96% agreed or strongly agreed it was worth travelling to the Golden Jubilee for their treatment.

Responses were received from patients from 15 different health boards as follows:

Health Board of Residence	Number of patients who responded	Percentage of overall response rate
Ayrshire & Arran	61	11.5%
Dumfries & Galloway	29	5.5%
Fife	18	3.4%
Forth Valley	84	15.8%
Grampian	15	2.8%
Greater Glasgow & Clyde Argyll & Bute (part of GGC Health Board)	47 1	8.9% 0.2%
Highland	12	2.3%
Lanarkshire	62	11.7%
Lothian	140	26.4%
Orkney	2	0.4%
Scottish Borders	8	1.5%
Shetland	17	3.2%
Tayside	25	4.7%
Western Isles	3	0.6%
Health Board not indicated	6	1.1%
Total	**530**	**100%**

Figure 73: Summary of Patient Feedback

	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Not Indicated	Agree and Strongly Agree Combined
1	I was given sufficient time to discuss treatment options with the surgeon during my outpatient appointment	72.1%	25.3%	1.1%	0.2%	0.6%	0.6%	**97.4%**
		382	134	6	1	3	3	**516**
2	I was given sufficient time to ask the clinical team questions during my pre-operative assessment appointment	72.3%	25.7%	0.9%	0.4%	0.4%	0.4%	**98%**
		383	136	5	2	2	2	**519**
3	I was satisfied I was given appropriate information prior to my surgery	73.8%	23.4%	1.5%	0.8%	0.4%	0.2%	**97.2%**
		391	124	8	4	2	1	**515**
4	The staff were pleasant and helpful	84.7%	14.2%	0.45%	0.2%	0.6%		**98.9%**
		449	75	2	1	3		**524**
5	It was worth travelling to the Golden Jubilee National Hospital in order to be treated	84.9%	11.3%	2.1%	0.6%	1.1%		**96.2%**
		450	60	11	3	6		**510**
6	I would recommend the service to my friends and family	84%	12.3%	2.1%	0.2%	0.9%	0.6%	**96.3%**
		445	65	11	1	5	3	**510**

Patients were randomly selected by our eHealth department following a computer generated list and questionnaires were sent with stamped addressed envelopes and returned anonymously.

Patients were asked the 6 questions as detailed above and also invited to provide details of their response should they have either disagreed or strongly disagreed to any of the questions. They were also asked to provide additional comments in order to help us improve our services.

26 Benefits Realisation

	Question	Response
Benefits Realisation	How will the project's benefits be realised?	Outline: • Updated benefits register • Full benefits realisation plan • Community benefits objective

26.1 Updated Benefits Register

Following a review of the benefits Register which was developed at IA stage, given the short time since its approval, it is noted that there is no change to the benefits register at this time. The Register has been expanded to provide a more detailed benefits realisation plan below.

26.2 Full Benefits Realisation Plan

The full Benefits Realisation Plan is set out in

Figure 74.

Figure 74: Full Benefits Realisation Plan

Benefits Register								
1. Identification						Prioritisation-	Owner	Timescale
Ref No	Benefit	Assessment	As Measured By:	Baseline Value	Indicative Target Value			
1	Person centred - ness	Ensure that people who use the service have positive experiences and their dignity is respected	Patient feedback through patient survey – percentage of patients who rate the service and excellent or good	See Section 25 for a full summary of the patient feedback received to date	Patient questionnaire is ongoing - maintain current very positive patient feedback scores	5	Surgical Divisional Management Team & Clinical Service team	Ongoing review with specific review on opening of new unit in 2022
			Patient feedback	In 2017 there were 9 written compliments, 2 informal concerns raised, and 31 formal complaints.	Maintain current very low levels of complaints/ concerns	5	Surgical Divisional Management Team & Clinical Service	Ongoing review with specific review on opening of new unit in 2022

				Combining concerns raised and formal complaints they accounted for less than 0.30% of patients seen by the service			team	

2	LDP	Improving access to orthopaedic surgery, general surgery and endoscopy - Ensure that people who require to access the service can do so in a timely manner	Proportion of patients who are seen and treated within 12 weeks of being placed on a waiting list for surgery	As at Jan 2018 there were 10,413 patients WoS patients waiting over 12 weeks for an orthopaedic, general surgery procedure or an endoscopy (>6weeks)	Zero patients waiting more than 12 weeks for Orthopaedic surgery, General surgery or endoscopy	**5**	Surgical Divisional Management Team WoS Regional Boards	Review on opening Continual reduction in breaches of waiting times within region- for full impact review after first 12 months of opening
			Reduction in elective cancellations	Cancellations vary by specialty orthopaedic cancelation rate is approx 4% whilst general surgery rate is between 7 and 15%	Reduce Elective cancellations to under 25 for orthopaedic surgery and under 5% for general surgery	**5**	Surgical Divisional Management Team and Clinical Lead	Review monthly in run up to opening
4	Project Specific	Reduces reliance on high cost independent sector elective	A reduction in the number of procedures performed in the independent sector	901 procedures (WoS Boards only) were performed in independent sector in 2014/15	100% reduction saving circa £4.2m per annum (based on 2014/15	**5**	WoS Regional Health Boards	Monitor every 6 months following opening with support of data

		surgical capacity			spend			provided through ISD
5	Project Specific	Improvement in clinical productivity within orthopaedics	Minimum of 10% productivity gain in both clinic and theatres – across all WoS hospitals	Deliver more procedures within existing resources, baseline figure in 2015 is circa 26,000 orthopaedic procedures per annum	Deliver a minimum of 10% increase in productivity in Orthopaedic services within WoS Hospitals within existing resources – circa 2,600 additional procedures per annum	**5**	WoS Regional Health Boards with support from the Scottish Governmen t	It is assumed that this will be achieved over a few years as part of change will be incremental
6	Project specific	Improvement in recruitment retention of staff and availability of staff with the right skills and competencies	Improved ability to recruit and retain the hard to fill positions e.g. theatre nursing posts	As the service expands monitor the ability to recruit roles and monitor the success of the NHS GJ Theatre training academy approach, thereby training own theatre staff as the	Measure the success of the theatre training academy – aiming for 100% success rate i.e. trainee secures post at the end of training within the NHS GJ	**5**	Surgical Divisional Manageme nt Team with support from HR, recruitment and the Clinical	Assume improvement will be continuous with annual improvement in fill rate of posts and significant improvement

				service expands Monitor the retention rates of staff – orthopaedic ward nursing retention rates range between 7 and 15% turnover within our Orthopaedic ward areas	theatres. Lower existing turnover rates to under 7%		education team	within 5 years of the facility opening
		Improvement in staff wellbeing and engagement	Measure through annual imatter survey response	2016 employee engagement score for the Orthopaedics theatre team was 76% the EES for the orthopaedic outpatient team was 83% Within General theatre nursing team 100%, SDU nursing team 100%ortho Physio	Either maintain or improve employee engagement scores	**5**	All Team Leads within OrthopaediService With support from the surgical divisional management team	Annual Review and continual improvement and maintenance of high EES

				team 82%, PACU nursing team 46%				
7	Project Specific	Delivery of wider Economic Benefits - Community Benefits e.g. New Entrants, Apprenticeships, SME and 3rd Sector benefits (see appendix A7)	Measure using the community benefits plan (see appendix A9)	Community benefits will be generated and delivery monitored when the PSCP is selected and commences work	Targets are set out in the agreed community benefits plan (see appendix A7)	**5**	Programme Director and SRO and Programme Board	Delivered throughout the project – see detailed community benefits plan

26.3 Community Benefits

The Golden Jubilee expansion projects aspire to make a positive social and economic impact, particularly within the West Dunbartonshire area, by maximising employment, training and business opportunities and supporting education activities throughout the development of the project.

A detailed Community Benefits Plan has been developed in line with Scottish Government targets. The targets and objectives generated are done so based on the project value. These targets were established prior to the appointment of the PSCP and compliance with and monitoring of form part of their duties under the agreed appointment.

Through the appointment process Kier demonstrated their ability to exceed the targets set by NHS GJ and it is against these enhances targets that success will be measured. Kier have a dedicated Social Impact Manager, Amanda Wright who will work closely with NHS GJ to ensure the investment made by this project maximises opportunities that are both real and tangible to the local community.

A record of progress will be kept through the monthly updating of the community benefits tracker. Progress and impact will be further monitored by Kier construction's own dedicated monitoring system which provide a tangible output on the social value that has been delivered on the project.

A copy of the agreed targets and tracker document are included in Appendix A7 of the OBC.

It is understood that in order to deliver the community benefits plan early engagement is paramount. Already underway during the pre construction period is the process of identifying local stakeholders such as schools, colleges, universities, patient groups, community groups, local organisation, third sector / social enterprises and supported business.

27 Risk Management Plan

	Question	Response
Risk Management	How are the project risks being managed?	Outline: • Updated risk register • Risk control measures • Governance arrangements

This section of the OBC sets out NHS GJ's approach to risk management, in delivering the preferred option, discussing:

- Risk management philosophy
- Categories of risk
- The framework for risk management
- The current risk management plan

27.1 Overview

This section of the OBC sets out the NHS GJ's approach to risk management, in delivering the preferred option, discussing:

- Risk management philosophy
- Categories of risk
- The framework for risk management
- The current risk management plan

27.2 Risk Management Philosophy

The Board's philosophy for managing risks is a holistic approach, seeing effective risk management as a positive way of supporting the project's wider aims. The Board recognises the value of putting in place an effective risk management framework to systematically identify, actively manage and minimise the impact of risk and support realisation of benefits. The Board is considering the risk appetite for the project; with work undertaken to develop this via the Steering Group and Programme Board. This is at final stages and will be used to support the management of risk in agreeing tolerances and escalation.

Application of a robust framework will support the Board in understanding its risk exposure and taking appropriate steps to mitigate negative impacts and maximise benefits:

This is done by:

- Identifying potential risks and putting mitigations in place to minimise the likelihood of them materialising and adversely impacting on the project;
- Putting in place robust processes to monitor risks and report on the impact of planned mitigating actions;
- Implement the appropriate level of control to address the adverse consequences of the risks if they materialise;
- Having strong decision making supported by a clear and effective framework of risk analysis and evaluation

Once risks are identified, the response for each risk will be one or more of the following types of action:

- Prevention, where countermeasures are put in place that either stop the threat or problem from occurring, or prevent it from having an impact on the business or project.
- Reduction, where the actions either reduce the likelihood of the risk developing or limit the impact on the business or project to acceptable levels.
- Transfer, the impact of the risk is transferred to the organisation best able to manage the risk, typically a third party (e.g. via a penalty clause or insurance policy or contractor).
- Contingency, where actions are planned and organised to come into force as and when the risk occurs.
- Tolerate, where following mitigation a risk still remains outwith the project appetite, the Hospital Expansion Programme Board may decide to accept this risk – this is most likely when the likelihood of a risk is outwith the control of the Board or if likelihood is reduced as far as possible and robust contingencies are in place should the risk occur
- Where risks are reduced and/or tolerated robust contingency, where actions are planned and organised to come into force as and when the risk occurs, form part of the mitigation

27.3 Categories of Risk

As outlined in the Initial Agreement the Board assessed risk across clusters (financial, operational delivery, workforce, reputation, regulation and strategic). Each individual risk is assigned an overall cluster and the potential impact of all risks is considered across all clusters.

In developing the preferred solution, the Board examined the capital and revenue risks in detail and also applied optimism bias, further details on each of these is outlined in Figure 75.

Figure 75: Financial Risk Assessment

Area	Description	How assessed
Capital risks	Capital risks relate to unknown or unidentifiable factors that increase the cost and time of the project construction	Qualitative and quantitative risks assessed by a Quantity Surveyor
Optimism bias	Optimism bias is the demonstrated systematic tendency for appraisers to be over optimistic about key project parameters. This creates a risk that predicated outcomes do not fully reflect likely costs	Standard methodology to identify extent of optimism bias with mitigating factors confirmed through Board assessment
Revenue risks	These are risks relating to everyday management encompassing cost and activity as well as external environmental factors	Risks identified with quantitative and qualitative assessment through workshop

27.4 The Risk Management Framework

The Board has designed a simple risk management framework that focuses on effective identification, reporting and management of risks. Three key roles in the risk management process that are highlighted in Figure 76.

Figure 76: Risk Management Roles

Role	Responsibility	Reporting & accountability
Risk management lead	Manages the process for identifying and addressing risk and maintaining the risk register on a daily basis	SRO and Hospital Expansion Programme Board
Risk management sub group	Brings together key risk owners to co-ordinate the identification and assessment of risks plus the management of key risks	Steering Group and Hospital Expansion Programme Board
Risk owner	Individual or group responsible for developing and implementing risk mitigation measures for individual risks they are responsible for	Risk management lead and risk management sub group

Work to date has been very much focused on the project level risks and setting the framework to support the identification, management and escalation of risks as the programme progresses. The Board has recognised and acted upon its responsibility for leading effective risk management throughout each stage of the project. This is particularly important at OBC stage, to ensure that the risks associated with the preferred solution have been identified and addressed.

The paragraphs below set out the work completed to date, demonstrating the proactive approach to risk management within this project.

27.5 The Current Risk Management Plan

The Board has developed a risk register to support effective management of the risks identified. The risk register covers all areas of risk and has been developed through a series of workshops, meetings and discussions with key project members to provide a mechanism for managing the projects risks even at this early pre approval stage.

There has been agreement made with the PSCP on risk ownership with a PSCP risk register in place that is also reported to the Project Steering Group and Programme Board.

27.6 Responsibility for managing the risk register

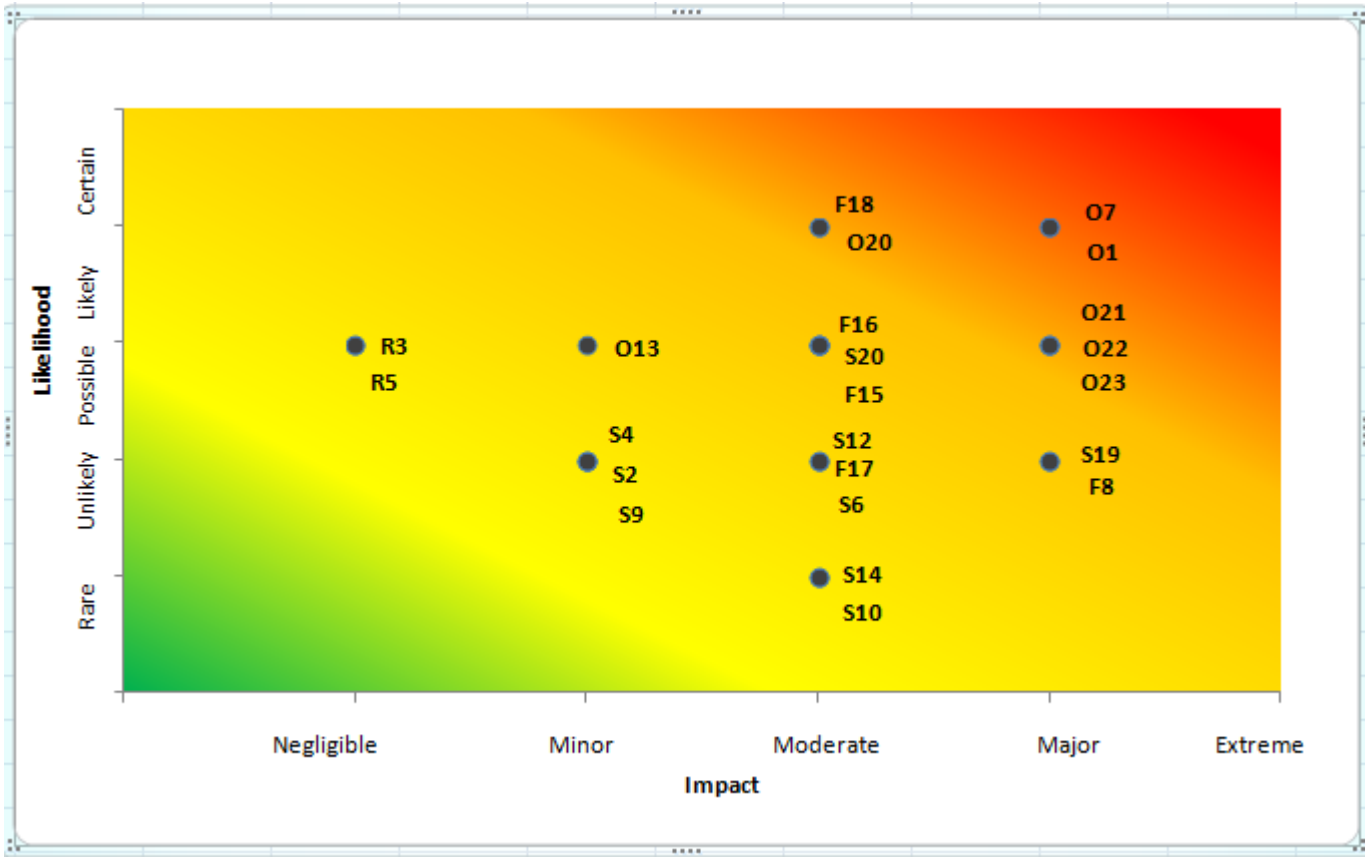
The responsibility for managing the overall risk register lies with the Programme Team. As noted previously the PSCP Project Manager will review the PSCP risk register and update the programme team monthly to allow review of shared risks captured on the overall register. The overall risk register will be issued on a monthly basis with updated changes and reviewed via the Steering Group and Programme Board.

The current risk register

The risk register is attached at Appendix A9 and includes:

- A description of the risk and potential impact associated
- The risk action plan showing current and planned mitigation
- a HEAT map overview of the risk level
- The risk owner and individual responsible for ensuring action

Figure 77: Risk Register HEAT Map



As acknowledged within the options assessment; the high risk profile is felt to be a normal risk pattern at this stage of the project given the scale of the construction works; the active monitoring of risks will continue throughout the project. Ongoing monitoring and reporting will support identification of the change in the potential impact of the risk and monitor progress of actions. Where new risks are identified, these are communicated to the Hospital Expansion Programme Board and the risk register is updated to reflect decisions made.

27.7 Conclusion

This section of the OBC shows that the Board has:

- A sound risk management philosophy that is based on effective risk management
- A clear risk management framework, whose simple structure will facilitate effective risk management
- Already made considerable progress in identifying, evaluating and addressing the risks for the preferred solution chosen in this OBC
- Further development of the risk register is required after the approval of the OBC in terms of the potential cost associated with each risk

28 Commissioning

	Question	Response
Commissioning	What commissioning arrangements are being planned?	Outline: • Reporting structure aligned to main project structure. • Person dedicated to leading this process • Key stages • Resource requirements

28.1 Technical Commissioning

As part of the soft landing process Kier's will lead on the technical commissioning elements of the works. Included within the role in the project is building services lead from pre- construction through to commissioning and handover. The responsibilities during the pre- handover and commissioning stages are as follows:

Prepare and manage programme for services works and monitor progress in advance of commissioning.

Develop testing and commissioning programme and agree with user group.

Testing and commissioning programme to confirm all elements of commissioning noting times and dates and agree extent of witnessing with user groups and project supervisor.

Identify testing and commissioning outputs required and demonstrating compliance or methods of rectification. This includes demonstration of service integration with existing where required.

Identify and provide testing and commissioning certification for statutory compliance and for recording and inclusion in projects H&S and O&M manuals.

Develop and carry out training programme and agree with users.

The process starts with the designers providing an overview of the intended operational parameters of the major systems that will be required for the day to day running of the facility and agreeing this with direct input from the end-users/ operators of each facility. This is then followed up by a series of technical workshops where the specialist contractors with design input are present. This will allow them to provide specific input to commissioning requirements and the preventative maintenance required after handover.

An independent commissioning engineer who is employed directly by Kier to ensure the technical and

commissioning expertise is maximised from day one, and to provide independent validation of the commissioning results and record presentation

The overall process is also intended to control life cycle costing in the maintenance of the facility during its intended lifespan and this will include detailed discussion with the Estates team on the COBie data drops which will be evolved from the BIM model. This is very important to ensure that the end user gets the maximum benefit to his requirements tailored to suit the specific requirements of the facility in question.

Filming of systems will be carried out by the PSCP contractor to ensure the Estates are aware of the operation of the specialist equipment.

Working as part of the independent advisor team during the technical commissioning process will be an NHSNHS GJ appointed project supervisor. Their role will be to review the works for compliance with the proposals as well as ensuring the commissioning leads roles are fulfilled in line with the contract.

An appointment has yet to be made for the supervisor role but the position will be provided through HFS consultant framework to ensure suitable skills and experience for the role.

28.2 Non-Technical Commissioning

As identified in section 24 an Equipment Group has already been established and a separate Commissioning Group will be established, both of these groups report into the Programme Steering Group.

28.2.1 Equipment Group

A terms of reference have been developed for the equipment group however it is important to note that the Equipment Group will be responsible for agreeing procurement routes for items including understanding if existing routes and supply chains exist or if new are required. Should new be required, routes to tendering and setting up will be carried out in accordance with NHS GJs standing financial instructions. The Equipment Group will be led by Robert Stewart, NHS GJ's Equipment and Compliance Manager.

Where feasible and practical, the procurement of high value items (such as theatre lights, theatre pendants etc and also high volume items equipment) across the National Elective centres Programme, could potentially be joined and may deliver performance and commercial benefit.

28.2.2 Commissioning Group

This Commissioning group will be established through the FBC process and will be initiated on completion of room data and component sheets and the full schedule of FF&E components. Completion of this process will mean all components have been identified; their procurement route will have been established and identified as either PSCP or direct by NHS GJ. Leading this process and this group will be Susan McLaughlin Clinical Lead who will be further supported by John Scott Programme Director and the Clinical Nurse Managers for each of the clinical areas as well as key heads of clinical and non clinical support services.

The group to be formed will include representation from the clinical workstream groups, clinical and non-clinical staff members, FM representatives, IT, telecoms and infection control. Through the process further members may be identified and included as required.

The Commissioning Group will be responsible for the following:

- Establishing a commissioning plan detailing timescales for item commissioning, in line with project programme. Timescales to include lead in, install and testing, commissioning and training required and identifying (if required) time and costs for any double running or reduction in clinical activity within the first month of opening.

- Establishing if any item being commissioned requires PSCP input regarding any preparatory or install works. If required this will be coordinated with the works programme and beneficial access agreed through the construction contract.

- Establishing a timeline to identify key targets in relation to staff training needs, tasks and responsibilities arising from policy or operational issues.

The group will draw on experience provided by the wider surgical divisional management team and the heads of department form clinical and non clinical support services, who have regularly managed the expansion of surgical services in the last 5 years expansion of the NHS GJ. In addition, the expertise of the wider NHS GJ team who were involved in the creation of the West of Scotland Heart and Lung centre can also be called on when developing the detailed commissioning plan.

A more detailed equipping and commissioning plan will be developed as part of the FBC process.

29 Project Evaluation

	Question	Response
Project Evaluation	How will the success of the project be assessed?	Outline: • Person dedicated to leading this process • Key stages • Resource requirements

This section of the OBC sets out the plans which the Board has put in place to undertake a thorough and robust post-project evaluation (PPE). The areas covered are:

- Person dedicated to leading this process
- Key stages
- Resource requirements

29.1 Leadership of the Project Evaluation Process

Post Project Evaluation will be undertaken in line with the SCIM guidelines to determine the project's success and identify lessons to be learned.

The first three stages of Project Evaluation will be undertaken by John Scott, Programme Director. John will undertake the following key tasks:

- Assist with developing benefits plan detailing service benefits expected on completion of project and programme of when these will be realised.
- Advise/aid Project Board in drawing up a measurable Benefits Realisation and Evaluation Plan.
- Review the benefits of a project then assess the outcomes following completion.
- Initial Post Project Evaluation - reviewing the performance of the project in terms of the original project objectives.
- Post Occupancy Evaluation now all service benefits have been realised.
- Undertake staff and patient/ visitor satisfaction surveys, questionnaires or workshops.
- Organise Lessons Learned Workshop for project team/ key stakeholders.

- Key stakeholders to assist in assessing benefit outcomes.

29.2 Key stages

The key stages of project evaluation applicable for this project are set out in Figure 78.

Figure 78: The Four Stages of Project Evaluation

Stage	Evaluation undertaken	When undertaken
1	Plan and cost the scope of the Project Evaluation work at the project appraisal stage. This should be summarised in an Evaluation Plan	Plan at OBC, fully costed at FBC stage
2	Monitor progress and evaluate the project outputs	On completion of the facility
3	Initial post project evaluation of the service outcomes	Six months after the facility has been commissioned
4	Follow up project evaluation (or post occupancy evaluation - POE) to assess longer term service outcomes two years after the facility has been commissioned. Beyond this period outcomes should continue to be monitored. It may be appropriate to draw on this monitoring information to undertake further evaluation after each market testing or benchmarking exercise	Typically at intervals of 5 – 7 years

The detailed plans for evaluation at each of these four stages will be drawn up by the Board in consultation with its key stakeholders. The paragraphs below set out the types of issues considered at each stage of the review and the timescales for each stage.

These roles are further described in stages below.

During Construction, the project will be monitored with regards to time, cost, the procurement process contractor's performance, and any initial lessons learned.

Six to twelve months after commissioning of the facility a wider ranging evaluation (Stage 3) will take place. This will assess, amongst other factors, how well the project objectives were achieved; was the project completed on time, within budget and in line with specification; whether the project delivered value for

money; how satisfied patients, staff and other stakeholders are with the project results and the lessons learned about the way the project was developed, organised and implemented. A key focus will be sharing the information gathered so that the lessons to be learned are made available to others.

Longer term outcomes (Stage 4) will be evaluated 2 to 5 years post migration to the new facility as by this stage the full effects of the project will have materialised. The evaluation will be undertaken by the in-house Post Project Evaluation team and both quantitative and qualitative data will be collected during stages 3 and 4 evaluation using questionnaires and workshops.

Part of the post project evaluation will comprise the conclusion of the AEDET/ NDAP process. The Post Occupancy Evaluation will take place six to twelve months after commissioning and occupancy and will aim to be reviewed with the established stakeholder group. Further insight at this stage can be gained by input from new staff brought in through the required recruitment process. Lessons learned can therefore be gained from those with a detailed knowledge of the project and process and those with only an insight into the completed project.

29.3 Expected Timings

The timings of the different stages of the Project Evaluation process are set out in Figure 79.

Figure 79: Timing of key stages of the Project Evaluation process

Stage	Requirement	Timing
1	Produce a costed Evaluation Plan which is incorporated into the FBC. This includes: Confirming objectives, benefits and risks of the project Identifying whether the evaluation will be carried out in house or y an external party Agreeing participants in the Evaluation Steering Group and Evaluation Team, including patients and public representatives Costing the process, including requirements to backfill staff time	Completed before submission of FBC and included within FBC costs and FBC submissions
2	Monitor progress and evaluate the project outputs. This includes: Monthly monitoring of construction and other elements of	Within six to eight weeks of the completion of the facility

	project delivery Formal reporting at key milestones of the project plan Production of completion report once construction work has been completed	
3	Initial post-project evaluation of the service outcomes. This includes: Review of the Project Objectives and BRP to measure the extent to which they have been achieved Evaluation of the project management and control processes to assess whether they have worked satisfactorily Submission of the PPE to the SG	Six months after the new facility has been commissioned
4	Follow up post project evaluation (or post occupancy evaluation – POE) to assess longer term service outcomes. This will include: Clinical evaluation – whether the model of care has been successfully implemented and maintained Quality evaluation - whether the anticipated patient outcomes and benefits have been realised Overall benefits assessment – whether the full range of projected benefits in the benefits realisation plan have been realised Financial evaluation – whether the overall costs of the scheme have remained within the expected cost envelope	Two years after the facility has been operative

29.4 Resource requirements

The Programme Director will lead, co-ordinate and oversee the evaluation. The team to support the Project Evaluation is not yet confirmed, however the evaluation team will be multi-disciplinary and include the following professional groups, although the list is not exhaustive:

- Clinicians, including consultants, nursing staff, clinical support staff and Allied Health Professionals

- Estates professionals and other specialists that have an expertise on facilities
- Accountants and finance specialists, IM&T professionals, plus representatives from any other relevant technical or professional grouping
- Patients and/or representatives from patient and public groups

Any costs of the final post-project evaluation will be identified once the Evaluation Team are fully-established. These costs are therefore not currently included in the costs set out in this OBC.

Figure 80: Outline Monitoring and Evaluation Form

What will be assessed:	When it will be carried out		How it will be done (approach)
	Milestone Date	Report submission	
Project Monitoring stage:			
Project Costs	August 2019 - Complete	OBC	Cost plan agreed as part of NEC Stage 2 approval and included within OBC. Project Team & Cost Control Group review monthly.
Project Programme	March 2020	FBC	NEC Stage 2 & 3 programme agreed as part of NEC Stage 2 approval. NEC Stage 4 (construction) to be agreed at FBC. Project Team review monthly.
Project Scope Changes	March 2020	FBC	The Independent Project Manager has responsibility for issuing Compensation Events should a change in scope be required. These will be reported via the Project Team, Cost Control Group, Steering Group and Programme Board. Changes from OBC will be tracked and confirmed within FBC
Health & Safety Performance	October 2019	Construction	CDM Advisor to be appointed to review and report at monthly progress meetings during construction (NEC Stage 4).

Design & Technical Aspects	October 2019	Construction	Supervisor to be appointed to review and report at monthly progress meetings during construction (NEC Stage 4).
Risk Management Issues	August 2019-complete	OBC	The Independent Project Manager has responsibility for managing the risk register and will review the risk register and where necessary hold risk reduction meetings as and when required. Otherwise, the risk register will be issued on a monthly basis with updated changes and reviewed via the Project Team, Steering Group and Programme Board.
Service Benefits Evaluation stage:			
Expected benefits	6 months after commissioning	Within 12 months of opening	Review team identified to test and measure delivery of benefits against benefits realisation plan
Stakeholder expectations	6 months after commissioning	Within 12 months of opening	Stakeholder questionnaire and survey to be completed
Impact of service change	6 months after commissioning	Within 12 – 18 months post opening	Independent PPE process to evaluate impact of service and new facility
Service activity & performance	Monthly and post commissioning	Within 12 – 18 months post opening	

The Board has identified a robust plan for undertaking Project Evaluation in line with current SCIM guidance, which is fully embedded in the project management arrangements of the project. A more detailed plan along with any identified costs will be included within the FBC.

30 Conclusion

This OBC has set reconfirmed the requirement for provision of additional elective surgical capacity to support the current and future needs of the west of Scotland Population.

Investing in the expansion of the GJNH would progress a solution which:

- Provides sufficient additional capacity to meet the significantly increased demand for elective orthopaedic surgery, elective general surgery and diagnostic endoscopy between now and 2035.
- Eliminates the need for routine use of the independent sector
- Support the delivery of an innovative, person centred model of care improving overall service performance within orthopaedics, general surgery & diagnostic endoscopy
- Provides a state of the art purpose built facility essential to support improved clinical flow , improving patient privacy, dignity and confidentiality
- Enables timely delivery of treatment for patients and support the delivery of Scottish Government waiting time guarantees

The preferred option, Option 3: refurbish existing NHS GJ facilities and create new build accommodation to provide all additional activity within orthopaedics, general surgery and diagnostic endoscopy, offers the best investment to provide the required service going forward and fulfils all of the investment objectives identified in this OBC.

This option requires investment of £80.25m capital with recurring revenue costs of £38.6m (including depreciation), however this avoids expenditure in the independent sector to support the waiting times improvement plan of £49.4m.

These new facilities would provide a state of the art environment that would meet the needs and aspirations of both staff and patients within NHS GJ and the West Region.

Approval of this OBC will ensure that the project can move at pace towards the development of the Full Business Case for this critical project.

Glossary of Terms

IA	Initial Agreement
GJNH	Golden Jubilee National Hospital
NHS GJ	NHS Golden Jubilee
WoS	West of Scotland
OBC	Outline Business Case
SHC	Scottish Health Council
HFS	Health Facilities Scotland
NDAP	NHS Scotland Design Assessment Process
AEDET	Achieving Excellence in Design Evaluation Toolkit
PSCP	Principal and Supply Chain Partner
SRO	Senior Responsible Officer
SNAHFS	Scottish National advance Heart Failure Service
CRL	Capital Resource Limits
RRL	Revenue Resource Limits
ISD	Information Services Division
SA	Strategic Assessment
CIG	Capital Investment Group
EPR	Electronic Patient Record
GEM	Generic Economic Model
NPV	Net Present Value
CDMA	Construction Design Manager Advisor
HMRC	Her Majesty's Revenue and Customs
SGHSCD	Scottish Government Health and Social Care Directorate
NPC	Net Present Cost

SCIM	Scottish Capital Investment Manual
VfM	Value for Money
BREEAM	Building Research Establishment Environmental Assessment Method
BIM	Building Information Modelling
CDE	Common Data Environment
BEP	BIM Execution Plan
EIR	Employers Information Requirements
TUPE	Transfer of Undertaking and Protection of Employee
RAG	Red, Amber, Green
RPA	Risk Potential Assessment
OGC	Official Government Commerce
Wte	Whole time equivalent
BMS	Building Management System
H&S	Health & Safety
O&M	Operation & Management
FBC	Full Business Case
PPE	Post Project Evaluation
IM&T	Information, Management & Technology
IFRS	International Financial Reporting Standard
UXO	Unexploded Ordinance Specialist
MDT	Multi Disciplinary Team
LoS	Length of Stay
ARISE	Arthroplasty Rehabilitation in Scotland Endeavour
VC	Video Conference
AP	Advanced Practitioner

OP	Out Patients
SCP	Surgical Care Practitioner
VAT	Value Added Tax
SHBN	Scottish Health Building Note
EU	European Union
OJEU	Official Journal of European Union
RNM	Regional and National Medicine
BRP	Benefits Realisation Plan
POE	Post Occupancy Evaluation
SG	Scottish Government
SARU	Surgical Admission and recovery Unit
CSPD	Central Sterile Processing Department
PACU	Post Anaesthesia Care Unit
SDU	Surgical Day Unit
A&A	Ayrshire & Arran
D&G	Dumfries & Galloway
FV	Forth Valley
Lan	Lanarkshire
GGC	Grater Glasgow & Clyde
ENT	Ear, Nose & Throat
CT	Computerised Tomography
UGI	Upper Gastrointestinal
GS	General Surgery
GI	Gastrointestinal
CY	Circa Year

MRI	Magnetic Resource Imaging
ONS	Office of National Statistics
SLA	Service Level Agreement
TKR	Total Knee Replacement
THR	Total Hip Replacement
PTHR	Partial Total Hip Replacement
PTKR	Partial Total Knee Replacement
HCSW	Health Care Support Worker
Br	Breast
Cx	Cervical
Colo	Colon
H&N	Head & Neck
Lym	Lympoma
Mel	Melanoma
Ov	Ovarian
Urol	Urolethial

Appendices

Appendices are contained within a separate volume