General Surgery, Endoscopy & Urology Population Based Activity Projections and Service Options Paper

1. Introduction and Background

The purpose of this paper is two fold:

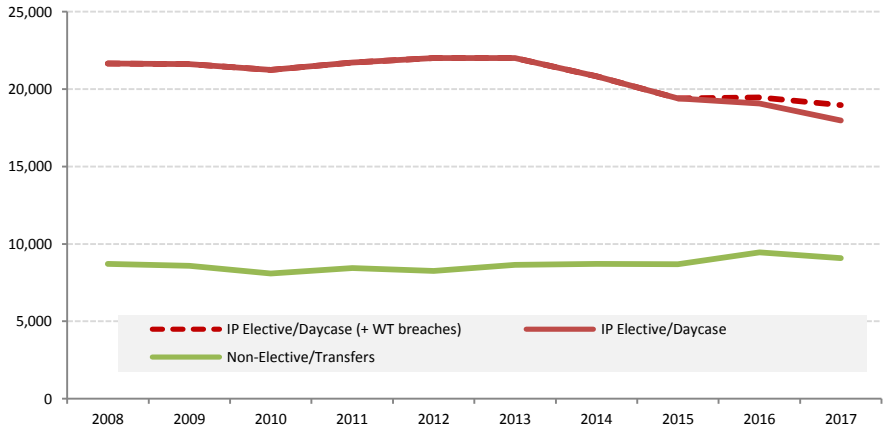
- To set out the updated population based activity projections for general surgery and endoscopy undertaken as part of the Outline Business Case (OBC) work.
- To identify and assess the potential service options for provision of general surgery and endoscopy at the GJF to support the population projections within the West of Scotland (WoS) between now and 2035

In addition this paper provides an overview of the updated urology population projections. Whilst this is not a service the GJF 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.

2. Recent Activity Trends

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

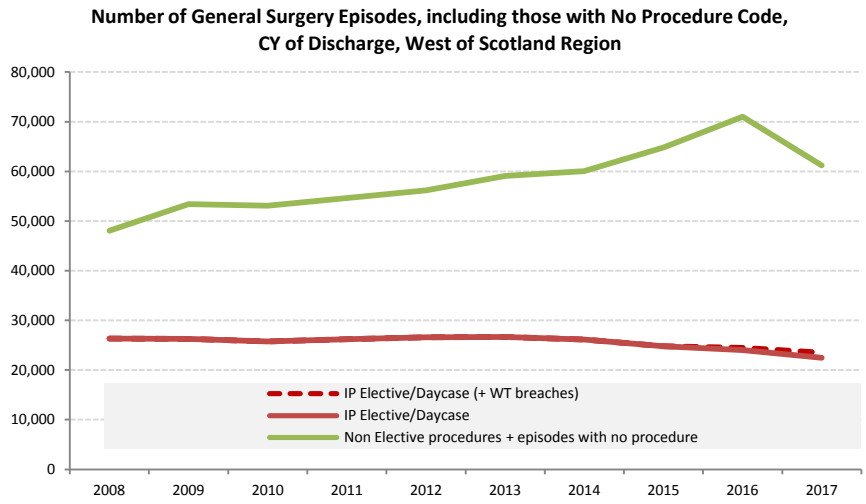
Chart 2.1 Number of General Surgery Procedures within 4 Subspecialties, CY of Discharge, West of Scotland Region



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. 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- Chart 2.2 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.



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 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 thee 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)

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- 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.

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3. 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 general surgery services, focusing on four key subspecialties; breast, colorectal, UGI and GS (other).

Projections shown in this paper are basis of 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, cy2015-2017).
- The combined impact of previous factors behind activity rates continues to evolve in the same manner as the previous 3 years.
- 5% 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. 5% upper tolerance is the equivalent of a 0.25% increase per annum until 2035.
- This analysis 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.

4. General Surgery – Summary of Population-based Projections

General Surgery – Summary of Requirements

- Overall forecast increase for 1774 additional general surgery procedures by 2035 (239 daycase, 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.

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Fig 4.1 Day Case and Inpatient Elective Procedures, West of Scotland Region

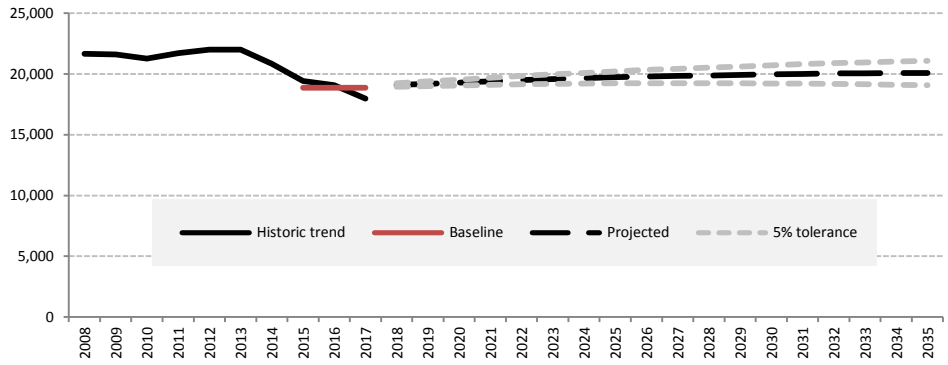

Fig 4.1> Chart showing Daycase and Elective General Surgery procedures; historical trends, baseline and population-based projections (with 5% tolerance)

As suggested previously, the annual number of daycase 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). Fig 4.1 shows the total projected increase up until 2035 and Fig 4.2 gives a breakdown of the projected increased demand in 5 year increments. 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. A further breakdown of the projected figures is provided in Appendix 1.

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Fig 4.2 Additional Projected Procedures at 5 Year Intervals	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	**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	0.7	0.7	0.5	0.1
Cumulative Theatre Requirements	0.7	1.4	1.9	2.0
Cumulative Forecast Additional New outpatient Appointments required – 30% conversion rate, 20 per session	2,014 pts 101 sessions per annum	3,964 199 sessions per annum	5,237 262 sessions per annum	5,910 296 sessions per annum
Cumulative Forecast Additional Pre operative assessment appointments required – 5% tolerance, 8 per day	635	1,250	1,650	1,862

Fig 4.2> Projected demand in Five Year Intervals, including additional theatre capacity required

The table above identifies there is a requirement for 2 additional general surgery theatres and additional capacity to see up to 5,910 new outpatients and 1862 additional pre operative assessments by 2035.

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5. 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 significant forecast additional endoscopy activity within the region between now and 2035

5.1 Diagnostic Endoscopy

Figure 5.1 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. Projections based only on population change indicate that this will continue to rise, albeit at a slower rate. Figure 5.2 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.

Fig 5.1 Upper Endoscopy (Diagnostic) - West of Scotland Region

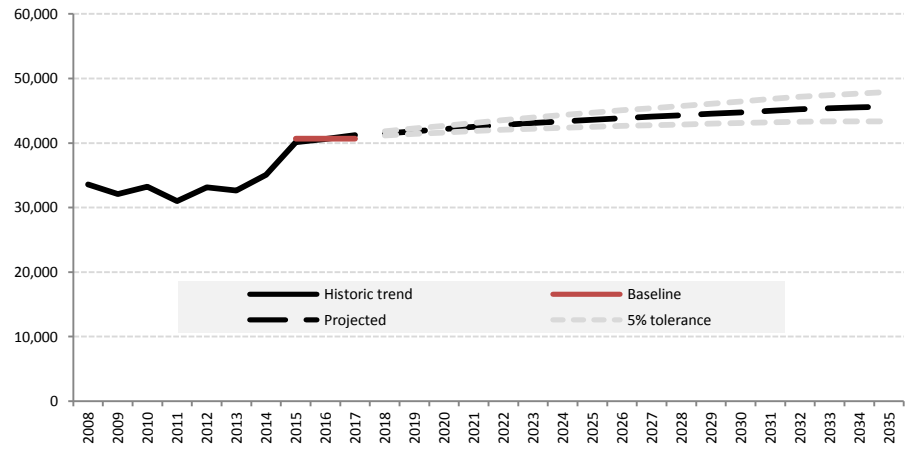

Fig 5.1> Chart showing Outpatient, Daycase and Elective upper endoscopy (diagnostic) procedures; historical trends, baseline and population-based projections (with 5% tolerance)

Fig 5.2 Additional Projected Upper Endoscopy Diagnostic Procedures at 5 Year Intervals	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

Fig 5.2> Projected demand for upper endoscopy (diagnostic) procedures in five year Intervals, including additional theatre capacity required

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

Figure 5.3 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.

Fig 5.3 Lower Endoscopy (Diagnostic) - West of Scotland Region

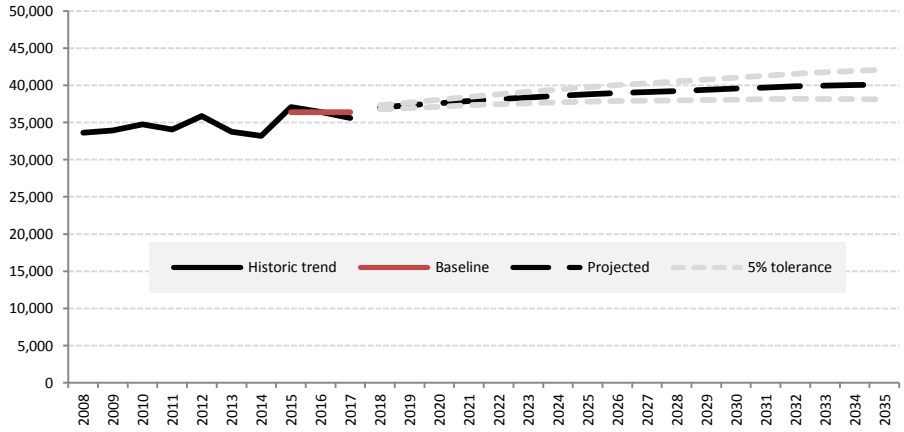

Fig 5.3> Chart showing Outpatient, Daycase and Elective lower endoscopy (diagnostic) procedures; historical trends, baseline and population-based projections (with 5% tolerance)

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Fig 5.4 Additional Projected Lower Endoscopy Diagnostic Procedures at 5 Year Intervals	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

Fig 5.4> Projected demand for lower endoscopy (diagnostic) procedures in five year Intervals, including additional theatre capacity required

Figure 5.4 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 a need 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.

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5.2 Therapeutic Endoscopy

Figure 5.5 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.

Fig 5.5 Upper Endoscopy (Therapeutic) - West of Scotland Region

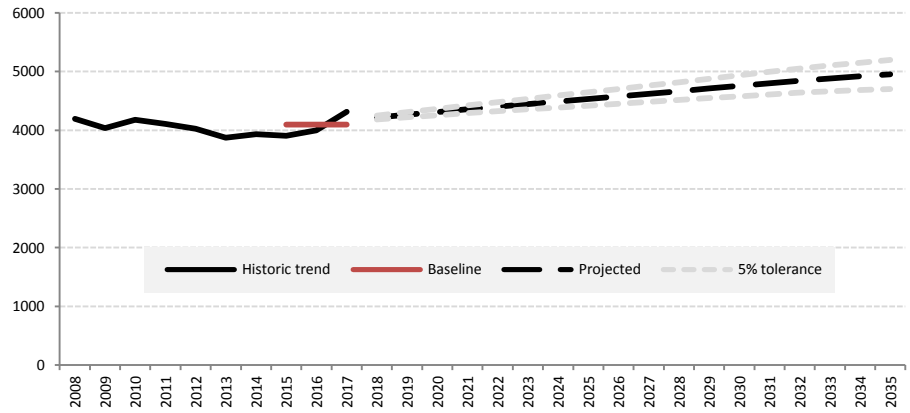

Fig 5.5> Chart showing Outpatient, Daycase and Elective lower endoscopy (therapeutic) procedures; historical trends, baseline and population-based projections (with 5% tolerance)

Fig 5.6 Additional Projected Upper Endoscopy Therapeutic Procedures at 5 Year Intervals	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

Table 5.6 identifies there is a requirement for 0.3 additional procedure rooms for upper GI therapeutic endoscopy by 2035.

Figure 5.7 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.

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Fig 5.7 Lower Endoscopy (Therapeutic) - West of Scotland Region

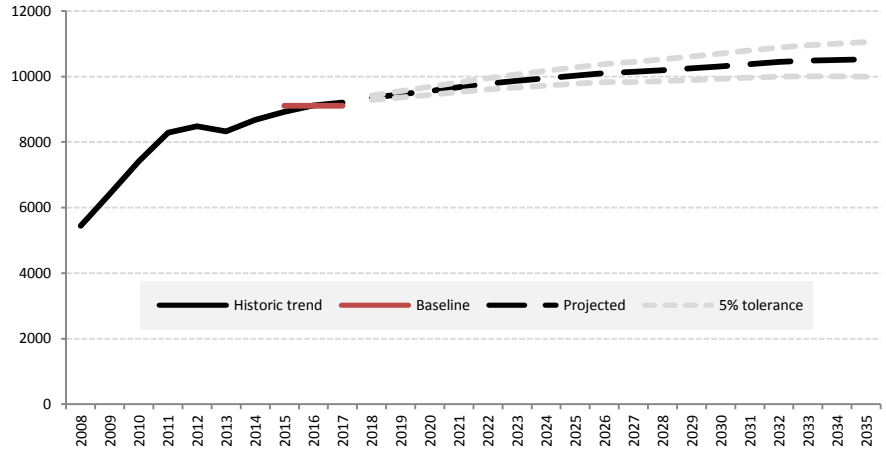

Fig 5.8 Additional Projected Lower Endoscopy Therapeutic Procedures at 5 Year Intervals	Baseline to 2020	2020-2025	2025-2030	2030-2035
Outpatients	58	53	30	24
Daycase	377	393	232	168
Inpatient Elective	22	23	23	21
Inpatient Non-Elective	11	12	14	12
Total	466	480	298	225
Cumulative Total	**466**	**946**	**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

Table 5.8 identifies there is a requirement for 0.6 additional procedure rooms for lower GI Therapeutic endoscopy by 2035.

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6. Urology – Summary of Population-based Projections

Urology

- 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.

Fig 6.1 Urology Procedures - Outpatient, Daycase and Elective Inpatient

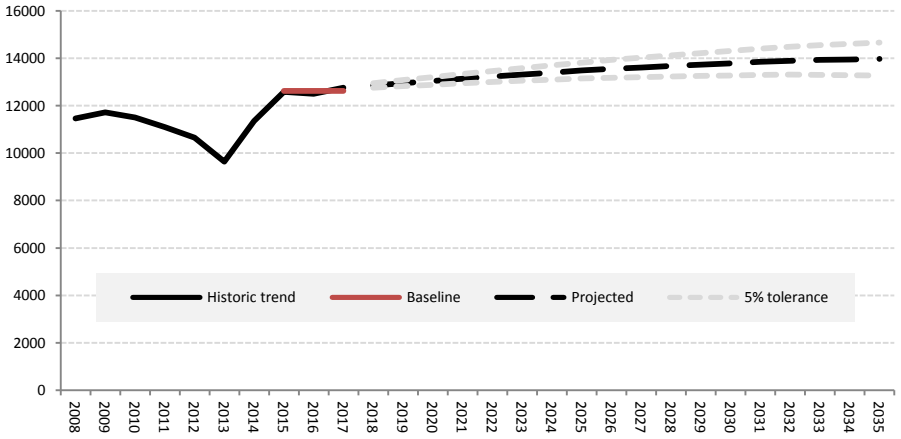

Figure 6.1 suggests that there has been an increase in the number of urology procedures over the last 10 years.

Fig 6.2 Additional Projected Procedures at 5 Year Intervals	**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 6.2 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.

Fig 6.3 Cystoscopy - Outpatients, Daycase and Elective Inpatients

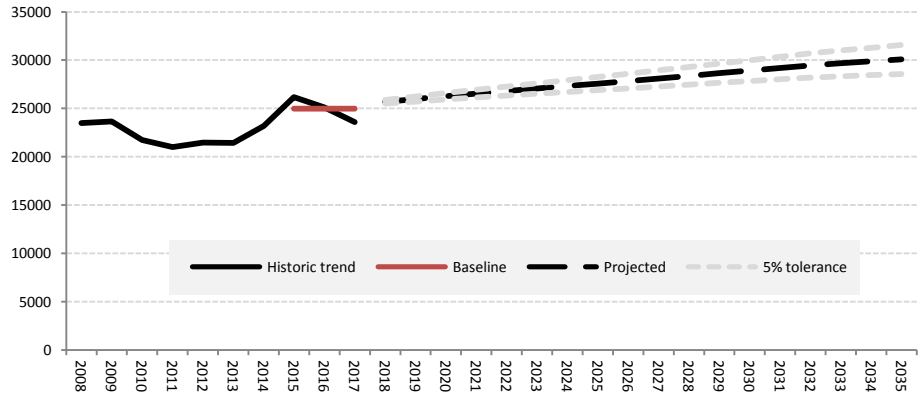

Fig 6.4 Additional Projected Procedures at 5 Year Intervals	Baseline to 2020	2020-2025	2025-2030	2030-2035
Outpatients	369	346	329	271
Daycase	716	750	760	684
Inpatient Elective	210	221	241	210
Inpatient Non-Elective	26	28	34	30
Total	1,321	1,346	1,364	1,195
Cumulative Total	**1,321**	**2,667**	**4,031**	**5,227**
5% tolerance	*(988-1,655)*	*(1,966-3,368)*	*(2,929-5,134)*	*(3,697-6,757)*
Additional Theatre Capacity Required at each 5 year interval	0.3	0.3	0.2	0.2
Cumulative Theatre Requirements	0.3	0.6	0.8	1.0

Table 6.4 identifies there is a requirement for 1 additional procedure rooms for cystoscopy by 2035. Further details of the breakdown can be seen in Appendix 3.

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7. Current waiting time backlog(s)

The current waiting time backlog for general surgery and endoscopy and the required capacity to address the backlog is identified in table 7.

Table 7 – latest waiting time position for General Surgery and endoscopy

Diagnostic Endoscopy (as at June 2018)	**No of Patients**	**Staffed Capacity Required to clear backlog**
Upper GI Endoscopy - Patients waiting longer than 6 weeks	2,130	0.4 procedure rooms working 10 sessions a week for 12 months
Lower GI Endoscopy - Patients waiting longer than 6 weeks	3,375	1.3 procedure rooms working 10 sessions a week for 12 months
General Surgery (as at 20th August 2018)	**No of Patients**	**Staffed Capacity Required to clear backlog**
Outpatients waiting > 12 weeks	3,998	A minimum of 200 new outpatient clinic sessions will be required over a 12 month period (average of approx 5 per week over 42 weeks - assumes a minimum of 20 patients seen per 4 hour clinic session). If 30% of patients seen require a general surgical procedure a further1,200 patients will be listed for surgery, therefore a further 1.4 staffed theatres are required to clear the outpatient waiting time backlog.
Patients waiting longer than 12 weeks for their procedure	1,197	1.4 of a general surgery theatre working full time for 12 months is required to clear the current backlog (Assumes 4 patient per theatre list - some will be day case some will be inpatients, full case mix not known at this point)
Overall to provide treatment for patients who have already exceeded SG WTG the following staffed capacity is required for a 12 month period: • 1.7 endoscopy rooms • 2.8 general surgery theatres, plus additional staffed outpatient / diagnostic capacity to see 3,998 outpatients, complete diagnostic tests and preoperative assessment capacity for 1,200 patients (assuming 30% conversion).		

In addition to the above:

- As at 20th August 2018 there were 994 new out patients waiting over 12 weeks to be seen and 989 patients waiting longer than 12 weeks for a urology procedure.
- As at June 2018 there were 1362 patients waiting longer than 6 weeks for a diagnostic cystoscopy

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Table 8 outlines the current cancer waiting time position as at June 2018. The data illustrates that overall within the West region the 31 day target of all patients diagnosed with cancer to begin treatment within 31 days of decision to treat, is being met. However across NHS Scotland only 82.4% of patients referred urgently with a suspicion of cancer began treatment within 62 days of receipt of referral, against NHS Scotland's target of 95%.

It is important that performance against both the cancer access targets and the elective waiting time targets are considered when planning the additional elective capacity for the West region.

Supporting the delivery of the 62 day target

The data indicates there are particular pressures in delivering the 62 day target for patients referred with suspected colon, upper GI and urological cancer. Creating additional upper and lower GI diagnostic endoscopy capacity within the GJF will help support quicker cancer diagnosis for patients within the region.

In addition supporting access to additional diagnostic imaging capacity will also help, the recent opening of a second new MRI at GJF will help support quicker diagnosis for patients within the region.

Supporting the delivery of the 31 day target

The data indicates there are particular pressures in delivering the 31 day target for treatment of colon cancer within the region, in addition NHS GGC have particular pressures in the delivery of treatment for breast and urological cancers. the GJF could provide support the region by providing additional capacity for day case and short stay general surgery procedures (see potential service options in section 5) freeing up capacity within the existing hospitals to deliver specialist cancer treatment and support the delivery of a regionalised urology service. It is proposed that the general surgery theatres are designed and built in a flexible way to support the current and potential future requirements of the region.

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Table 8: Cancer waiting time - position as at June 2018

62	NHS Board						
Jun-18	AA	DG	FV	GGC	La	GJNH	Scot
Br	93.1%	100.0%	100.0%	86.0%	100.0%	-	93.1%
Cx	0.0%	-	100.0%	100.0%	-	-	57.1%
Colo	75.0%	100.0%	20.0%	71.9%	91.3%	-	68.8%
H&N	66.7%	100.0%	100.0%	72.7%	100.0%	-	84.0%
Lung	85.7%	87.5%	87.5%	92.9%	100.0%	-	90.2%
Lym	100.0%	100.0%	100.0%	100.0%	100.0%	-	90.9%
Mel	100.0%	-	100.0%	100.0%	100.0%	-	93.3%
Ov	75.0%	-	100.0%	100.0%	100.0%	-	84.2%
UGI	85.7%	100.0%	57.1%	73.7%	100.0%	-	84.0%
Urol	72.7%	80.0%	82.6%	53.7%	100.0%	-	69.7%
All	82.4%	92.9%	75.4%	78.7%	98.3%	-	82.4%

Cancer Type

31	NHS Board						
Jun-18	AA	DG	FV	GGC	La	GJNH	Scot
Br	100.0%	100.0%	100.0%	93.4%	100.0%	-	95.7%
Cx	-	-	-	100.0%	-	-	100.0%
Colo	100.0%	100.0%	100.0%	98.2%	100.0%	-	96.9%
H&N	100.0%	100.0%	100.0%	100.0%	100.0%	-	100.0%
Lung	100.0%	100.0%	100.0%	98.6%	100.0%	100.0%	97.4%
Lym	100.0%	100.0%	100.0%	100.0%	100.0%	-	98.7%
Mel	100.0%	100.0%	100.0%	100.0%	100.0%	-	97.5%
Ov	100.0%	-	100.0%	100.0%	-	-	96.7%
UGI	100.0%	100.0%	100.0%	98.4%	100.0%	-	99.0%
Urol	100.0%	91.7%	100.0%	90.3%	100.0%	-	89.2%
All	100.0%	98.0%	100.0%	95.9%	100.0%	100.0%	95.4%

Cancer Type

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8. Potential Service Options

Four potential service options have been identified for general surgery and five potential service options have been identified for endoscopy as follows, any combination of these options can be considered.

Table 9: Potential Service Options for General Surgery Expansion

Ref	Service Options – General Surgery	Potential Benefits	Potential Risks	Does this option meet regional and patient requirements?
A	Continue to offer the current case mix – a mixture of day case general surgery (status quo option) Service provision mainly Hernia and Cholecystectomy procedures with other day case procedures as required.	Minimal service change required Opportunity to offer pre operative assessment service at the GJF – improving patient prep ahead of surgery and minimising patient cancellations (see proposed model of care paper) Outpatient assessment would continue to be provided locally – investment will be identified in OBC	Lost opportunity to further improve patient pathways for specific procedures and become a 'go to' centre of excellence for specific day case surgeries e.g. hernia procedures Limited opportunity to develop a sustainable medical workforce plan - likely to be little interest in shared job plans if service isn't properly defined Likely to be more difficult to recruit and retain nursing staff, without a defined service – potential risk of theatre nursing team deskilling through time Often difficult to predict overnight bed requirements due to case mix Potentially limits the ability to improve efficiency and effectiveness of the service to its maximum	Potentially offers a range of minor / day case general surgery capacity – to meet regional need between now and 2035 In theory offers capacity to support delivery of waiting times – throughput will not be as efficient given the changing case mix in response to need, therefore unlikely to meet the entire regional need. It does not offer the region an efficient service or a sustainable medical workforce proposition.

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Ref	Service Options – General Surgery	Potential Benefits	Potential Risks	Does this option meet regional and patient requirements?
B	Develop the general surgery service to become a centre of excellence for Hernia surgery Providing care for patients up to 1 day of stay (86% of all hernia procedures in West of Scotland have a length of stay of 1 day or less) Capacity provided for approx 1478 additional procedures per annum (plus existing theatre for a further 864 hernia operations) overall providing capacity for 2,592 procedures per annum (approx 55% of all WoS Hernia Procedures)	Enables the GJF general surgery service to develop and focus on hernia surgery and become a WoS high volume centre of excellence for Hernia surgery Supports opportunity to improve service for patients becoming a more efficient and effective service Opportunity to offer pre operative assessment service at the GJF – improving patient prep ahead of surgery and minimising patient cancellations (see proposed model of care paper) Opportunity to provide appropriate facilities for patients staying up to 1 day – at present patients are boarded to another area for overnight care if required Outpatient assessment would continue to be provided locally – investment will be identified in OBC Provides opportunity to develop a sustainable medical workforce plan moving towards shared job planned approach and reducing reliance on visiting clinicians only Opportunity to reduce cost per case with resident consultants as opposed to WLI	Limits scope of referral for referring boards – can only send patients with a predicted length of stay of less than 1 day. WoS Boards would be required to carry out all Cholecystectomy cases that are currently sent to the GJF Does not offer capacity for patients who have a predicted LoS of over 1 day – assumes WoS Boards will continue to deliver more complex cases	Provides capacity to meet the predicted regional requirements for general surgery capacity between now and 2035 Offers opportunity to deliver sufficient capacity to manage general surgery waiting times/ Provides high quality high volume service for hernia surgery – potential to drive further service improvement and improve productivity and efficiency for the region Offers full opportunity to develop a WoS high volume Hernia centre combine expertise and offer amore attractive joint job plan proposition – reducing reliance on visiting clinicians and high cost WLI.

Ref	Service Options – General Surgery	Potential Benefits	Potential Risks	Does this option meet regional and patient requirements?
C	Develop the general surgery service to become a centre of excellence for Hernia surgery with a small amount of capacity for Cholecystectomy procedures. Providing care for patients up to 1 day of stay (86% of all hernia procedures in West of Scotland have a length of stay of 1 day or less) Capacity provided for approx 1478 additional procedures per annum (plus existing theatre for a further 864 hernia operations) overall providing capacity for 2,342 procedures per annum (approx 55% of all WoS Hernia Procedures) Plus 250 Cholecystectomy Procedures – routine day case per annum.	Enables the GJF general surgery service to develop and focus on 2 key surgical procedures Supports opportunity to improve service for patients becoming a more efficient and effective service Opportunity to offer pre operative assessment service at the GJF – improving patient prep ahead of surgery and minimising patient cancellations (see proposed model of care paper) Opportunity to provide appropriate facilities for patients staying up to 1 day – at present patients are boarded to another area for overnight care if required Outpatient assessment would continue to be provided locally – investment will be identified in OBC Provides opportunity to develop a sustainable medical workforce plan moving towards shared job planned approach and reducing reliance on visiting clinicians only Enables WoS Boards to continue to send both Hernia and Cholecystectomy patients for treatment. Opportunity to reduce cost per case with resident consultants as opposed to WLI	Limits scope of referral for referring boards – can only send patients with a predicted length of stay of less than 1 day. Does not offer capacity for patients who have a predicted LoS of over 1 day – assumes WoS Boards will continue to deliver more complex cases	Provides capacity to meet the predicted regional requirements for general surgery capacity between now and 2035 Offers opportunity to deliver sufficient capacity to manage general surgery waiting times/ Provides high quality high volume service for hernia surgery – potential to drive further service improvement and improve productivity and efficiency for the region Retains some flexibility and capacity for routine day case Cholecystectomy Procedures for West region. Offers full opportunity to develop a WoS high volume Hernia centre combine expertise and offer amore attractive joint job plan proposition – reducing reliance on visiting clinicians and high cost WLI.

Ref	Service Options – General Surgery	Potential Benefits	Potential Risks	Does this option meet regional and patient requirements?
D	As per option B - except provide care for Hernia patients staying up to 3 days in hospital post procedure.	Offers maximum flexibility to referring Boards – currently 95% of all hernia procedures stay for less than 3 days in hospital Enables the GJF general surgery service to develop and focus on 2 key surgical procedures Supports opportunity to improve service for patients becoming a more efficient and effective service Opportunity to offer pre operative assessment service at the GJF – improving patient prep ahead of surgery and minimising patient cancellations (see proposed model of care paper) Opportunity to provide appropriate facilities for patients staying up to 3 day – at present patients are boarded to another area for overnight care if required Outpatient assessment would continue to be provided locally – investment will be identified in OBC Provides opportunity to develop a sustainable medical workforce plan moving towards shared job planned approach and reducing reliance on visiting clinicians only Opportunity to reduce cost per case with resident consultants as opposed to WLI	Does not offer capacity for patients who have a predicted LoS of over 3 days – assumes WoS Boards will continue to deliver much more complex cases locally. Possible impact / implications for HDU for more complex patients – would require further exploration. Need to ensure continuity of care is provided – careful planning of job plans t o support consultant review / dialogue with clinical team – for those patients staying between 1 – 3 days to ensure continuity of care. This option may be much more difficult to deliver a balance of continuity of care for patients and efficient and attractive joint job plans for consultants, minimising travel.	Whilst this option creates sufficient capacity and can support delivery of waiting times within general surgery there are several disadvantages: Continuity of care for patients may be lost as consultants will be working across a minimum of two hospital sites. Overall it will be much more difficult to create attractive joint consultant job plans – that work logistically and offer continuity of care for patients, therefore this option has been discounted.

Ref	Service Options – General Surgery	Potential Benefits	Potential Risks	Does this option meet regional and patient requirements?
E	Develop capacity for another general surgery sub specialty.	If there is a general surgery subspecialty currently provided across multiple sites within the region that would potentially benefit from centralisation – this may offer a possible solution?	Unlikely to fit with the complex nature of cancer pathways – may cause further delays for patients and or prolong the time taken to either diagnose and or treat patients Increase in activity within general surgery is across all specialties – no one subspecialty is experiencing significant increase in demand – it is difficult to identify any one particular sub speciality that would be a natural fit. Would be a major service change proposal, requiring significant and potentially prolonged regional discussion May not be deliverable within the 2021 timescale due to scale of service change	WoS regional delivery plan is under development, general surgery facility will be developed to be flexible to meet potential future needs of the region. Given the time pressure to provide additional surgical capacity to meet waiting times, this option has been discounted.

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Table 10: Potential Service Options for Endoscopy Expansion

Ref	Service Options - Endoscopy	Potential Benefits	Potential Risks	Does this option meet regional and patient requirements?
A	Provide additional upper and lower GI diagnostic endoscopy capacity in line with population projections (2 additional Endoscopy rooms)	Supports delivery of upper GI diagnostic endoscopy waiting time target enabling improved access for patients within the region Supports delivery of 62 day cancer target for upper GI patients GJF experience is patients will travel to undergo diagnostic endoscopy – DNA rate much higher for therapeutic endoscopy when provided further from the patients home Combined with the general surgery service expansion – the additional endoscopy expansion will support the delivery of a more sustainable, efficient general surgery service at the GJF.	WoS Health Boards need to support the population projections for therapeutic endoscopy - an additional 2,782 procedures by 2035 – requires access to 0.9 additional staffed procedure room per annum • 1,313 Upper GI Therapeutic Endoscopies • 1,469 Lower GI Therapeutic Endoscopies Does not provide a patient centred approach to service delivery for lower GI endoscopy for distant boards May not provide lower GI endoscopy capacity where it is required to improve patient access and deliver waiting times	**This option provides capacity to meet the population projections for all diagnostic endoscopy between now and 2035.** **In theory this option supports the delivery of WTG and the 62 day cancer target for upper and lower GI cancers.** **However , patients will be required to travel following taking clean prep –-therefore NHS D&G will require to provide a local solution for lower GI endoscopy.** **Assumes therapeutic increased demand will be dealt with locally.**
B	Provide additional lower GI diagnostic endoscopy capacity – to support population projections (2 additional endoscopy Rooms)	Supports delivery of lower GI diagnostic endoscopy waiting time target enabling improved access for patients within the region Supports delivery of 62 day cancer target for lower GI patients GJF experience is patients will travel to undergo diagnostic endoscopy – DNA rate much higher for therapeutic endoscopy when provided further from the patients home Combined with the general surgery service expansion – the additional endoscopy expansion will support the delivery of a more sustainable, efficient general surgery service at the GJF, whilst also continuing to provide general surgery support to the cardiac programme.	WoS Health Boards still required to support the population projections for both upper GI diagnostic Scopes and therapeutic endoscopy - an additional 8,492 procedures by 2035 – requires access to 1.9 additional staffed procedure room per annum providing: • 2,782 Therapeutic Endoscopies • 5,710 Upper GI Diagnostic Endoscopies Does not provide a patient centred approach to service delivery for lower GI endoscopy for distant boards May not provide lower GI endoscopy capacity where it is required geographically to improve patient access and deliver waiting times Inability to deliver improved patient access and waiting time targets for upper GI diagnostic endoscopy	**This option only provides capacity to meet the population projections for lower GI diagnostic endoscopy between now and 2035.** **There would be insufficient capacity to support projected increases in upper GI endoscopy.** **However , patients will be required to travel following taking clean prep –-therefore NHS D&G will require to provide a local solution for lower GI endoscopy.** **Given the current waiting time backlog and inability to met the 62 day cancer target for patients with upper GI cancer combined with the fact that nationally over 59% of patients are waiting longer than 6 weeks for a diagnostic upper GI endoscopy – this option would not provide sufficient capacity or flexibility to meet WTG in the coming years.**

Ref	Service Options - Endoscopy	Potential Benefits	Potential Risks	Does this option meet regional and patient requirements?
C	Provide additional upper GI diagnostic endoscopy capacity – to support population projections (2 additional endoscopy rooms)	Supports delivery of upper GI diagnostic endoscopy waiting time target enabling improved access for patients within the region Supports delivery of 62 day cancer target for upper GI patients GJF experience is patients will travel to undergo diagnostic endoscopy – DNA rate much higher for therapeutic endoscopy when provided further from the patients home Patients more likely to travel for upper GI endoscopy – as no requirement to take clean prep Combined with the general surgery service expansion – the additional endoscopy expansion will support the delivery of a more sustainable, efficient general surgery service at the GJF, whilst also continuing to provide general surgery support to the cardiac programme.	WoS Health Boards still required to support the population projections for both lower GI diagnostic Scopes and therapeutic endoscopy - an additional 6,094 procedures by 2035 – requires access to 2.2 additional staffed procedure room per annum providing: • 2,782 Therapeutic Endoscopies • 3,957 lower GI Diagnostic Endoscopies Inability to deliver improved patient access and waiting time targets for lower GI diagnostic endoscopy	**This option only provides capacity to meet the population projections for upper GI diagnostic endoscopy between now and 2035.** **There would be insufficient capacity to support projected increases in lower GI endoscopy.** **Given the current waiting time backlog and inability to met the 62 day cancer target for patients with lower GI cancer combined with the fact that nationally over 59% of patients are waiting longer than 6 weeks for a colonoscopy – this option would not provide sufficient capacity or flexibility to meet WTG in the coming years.**
D	Provide capacity for both diagnostic and therapeutic endoscopy– to support population projections (2 additional Endoscopy rooms)	In theory supports delivery of all diagnostic endoscopy waiting time target enabling improved access for patients within the region Supports delivery of 62 day cancer target for upper and lower GI patients GJF experience is patients will travel to undergo diagnostic endoscopy (exception being distant board for lower GI scopes) Combined with the general surgery service expansion – the additional endoscopy expansion will support the delivery of a more sustainable, efficient general surgery service at the GJF, whilst also continuing to provide general surgery support to the cardiac programme.	Patients will be required to travel following taking clean prep – realistically this means the service can not be offered to NHS D&G patients DNA rate higher for therapeutic endoscopy when patients are asked to travel further from home – potentially inefficient use of resources Does not provide a patient centred approach to service delivery for lower GI endoscopy for distant boards Does not provide continuity of care for patient undergoing therapeutic procedures May not provide lower GI endoscopy capacity where it is required geographically to improve patient access and deliver waiting times	**This option provides capacity to meet the population projections for all diagnostic and therapeutic endoscopy between now and 2035.** **In theory this option supports the delivery of WTG and the 62 day cancer target for upper and lower GI cancers and provides capacity for therapeutic endoscopy forecast demand.** **However, patients will be required to travel following taking clean prep –-therefore NHS D&G will require to provide a local solution for lower GI endoscopy.** **Unable to provide continuity of care for patients undergoing therapeutic endoscopy.**

Ref	Service Options - Endoscopy	Potential Benefits	Potential Risks	Does this option meet regional and patient requirements?
E	Provide capacity for diagnostic endoscopy to support population projections– plus provide additional diagnostic capacity to enable local Health Boards to deal with the population projections for therapeutic endoscopy (3 Additional Endoscopy Rooms)	Will supports delivery of all diagnostic endoscopy waiting time target enabling improved access for patients within the region. Supports delivery of 62 day cancer target for upper and lower GI patients GJF experience is patients will travel to undergo diagnostic endoscopy - more efficient use of resources More patient centred approach – early access to diagnostic endoscopy in a patient group more willing to travel Provision of capacity to enable NHS A&A, D&G to send upper GI diagnostic endoscopy patients to GJF and undertake lower GI endoscopies locally. Supports continuity of care – patients requiring therapeutic endoscopy remain with local clinical team for ongoing therapeutic endoscopy procedure and follow up care. Combined with the general surgery service expansion – the additional endoscopy expansion will support the delivery of a more sustainable, efficient general surgery service at the GJF.	Requires further discussion with WoS boards as follows: NHS GGC,FV,Lan, A&A – additional diagnostic scopes to be sent to GJF to enable each board to deal with the additional therapeutic demand locally NHS D&G -additional upper GI scopes and diagnostic to be sent to GJF to support overall forecast demand. Modelling has identified the requirement for 3.7 additional scope rooms within the region, however this is before the impact of Qfit and CT colonoscopy. Assuming demand for lower GI endoscopy is reduced by 50% , there would be a requirement to build 3 additional endoscopy procedure rooms to support the forecast population growth. Early planning assumes only 2 endoscopy rooms within the proposed phase 2 GJF expansion –as part of the OBC there would be a requirement to establish if there is space for a third procedure room and sufficient space for additional decontamination capacity.	**This option provides capacity to meet the population projections for all diagnostic and therapeutic endoscopy between now and 2035.** **Provides sufficient capacity within the West region in delivering waiting times and the cancer waiting time targets for upper and lower GI cancers - improving access to care for patients** **Provide a more person centred approach.** **Supports continuity of care for patients undergoing therapeutic endoscopy**

9. Conclusion and Next Steps

The projected population modelling has identified the need for the following additional capacity within the West region by 2035:

- 9,667 additional Diagnostic endoscopies by 2035
- 2,872 additional Therapeutic endoscopies by 2035
- 1,773 additional General Surgery procedures by 2035
- 5,361 additional Urology procedures by 2035
- 5,227 Cystoscopies by 2035

At present there are over 5,505 patients waiting longer than 6 weeks for diagnostic endoscopy within the WoS region, plus 1,362 patients waiting longer than 6 weeks for a cystoscopy. There are also 1,197 patients waiting longer than 12 weeks for a general surgery procedure and 989 patients waiting longer than 12 weeks for a urology procedure.

It is recommended that a minimum of 2 additional general surgery theatres and a minimum of 2 additional endoscopy rooms and a maximum of 3 endoscopy rooms are provided at GJF to support the population based projections between now and 2035. This paper assumes that the current waiting time position will be fully recovered by the end of 2021 when the additional general surgery and endoscopy capacity will be available. It is recommended that the 2 general surgery theatres are flexible in design to support other surgical specialties if required by the region in the future.

Given the significant work already undertaken by the WoS planning team to implement a regional urology strategy, it is assumed that the forecast population projections for urology & cystocopy procedures can be dealt with through the delivery of a regionalised service.

A breakdown of the forecast general surgery and endoscopy procedures by Health Board by financial year is contained within appendix 5.

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The West of Scotland Engagement group are asked to review and discuss the recommendations within this paper, specifically the group are asked to agree:

1. The preferred option for general surgery provision –

Option B - Develop the general surgery service to become a centre of excellence for Hernia surgery Providing care for patients up to 1 day of stay (86% of all hernia procedures in West of Scotland have a length of stay of 1 day or less) . Capacity provided for approx 1478 additional procedures per annum (plus existing theatre for a further 864 hernia operations) overall providing capacity for 2,592 procedures per annum (approx 55% of all WoS Hernia Procedures)

Or

Option C – Develop the general surgery service to become a centre of excellence for Hernia surgery with a small amount of capacity for Cholecystectomy procedures. Providing care for patients up to 1 day of stay (86% of all hernia procedures in West of Scotland have a length of stay of 1 day or less) . Capacity provided for approx 1478 additional procedures per annum (plus existing theatre for a further 864 hernia operations) overall providing capacity for 2,342 procedures per annum (approx 55% of all WoS Hernia Procedures) Plus 250 Cholecystectomy Procedures – routine day case per annum.

2. The preferred option for Endoscopy provision-

Option A- Provide additional upper and lower GI diagnostic endoscopy capacity in line with population projections (2 additional Endoscopy rooms)

Or

Option E- Provide capacity for diagnostic endoscopy to support population projections– plus provide additional diagnostic capacity to enable local Health Boards to deal with the population projections for therapeutic endoscopy (3 additional Endoscopy Rooms)

The conclusions will be taken forward as part of the strategic case of the OBC for the Phase 2 expansion of the GJF.

Claire MacArthur, Programme Manager, GJF
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August 2018

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