NHS Board
29 July 2020

Lanarkshire NHS Board
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SUBJECT: REGIONAL SERVICE DEVELOPMENTS

(Vascular Hub and Spoke Model and Elective Capacity Expansion at GJNH)

1. PURPOSE

This paper is coming to the Board:

For approval	☐	For endorsement	☐	To note	☒

The purpose of this paper is to provide NHS Lanarkshire Board with an update on two regional developments moving to Full Business Case stage: the regionalisation of Vascular Services and the expansion of elective capacity at the Golden Jubilee National Hospital (GJNH).

2. ROUTE TO THE BOARD

The service developments in this paper have been by the relevant regional planning groups:

Prepared	☒	Reviewed	☒	Endorsed	☒

The West of Scotland vascular group was established in 2012 but it was October 2018 before a consensus was reached on the hub and spoke model. The Board has previously been updated on the move to regionalisation of vascular services through the Achieving Excellence pipeline (latest report October 2019). In November 2019 the Acute Governance Committee considered the case for change and service model in more detail and this was reflected in the minutes reported to the NHS Board in January 2020. Work was paused due to Covid but has now been reactivated. The Regional Planning Group reached agreement on the fine detail of a hub and spoke model on 29 June 2020 and this paper updates the Board in advance of the Full Business Case being completed.

The Expansion of elective capacity at the Golden Jubilee is part of the national elective centres plan announced by the Cabinet Secretary. The Outline Business case had already been approved nationally. The Full Business Case (FBC) was prepared for consideration of the West of Scotland Chief Executives on 13 July 2020, prior to going to the national Capital Investment Group on 27 July 2020.

3. SUMMARY OF KEY ISSUES

The regionalisation of Vascular Services has been recognised as essential to provide a critical mass that can sustain the necessary expertise and quality over a 24 hour period, especially in the face of workforce shortages. In October 2018 the West of Scotland endorsed a 2 centre model. The QEUH, supporting NHS Greater Glasgow & Clyde and NHS Forth Valley, has been operational since February 2019. The hub at University Hospital Hairmyres (UHH) will support NHS Lanarkshire (NHSL), NHS Ayrshire & Arran (NHSAA) and NHS Dumfries & Galloway (NHSDG) and is intended to be operational from April 2021. Workforce shortages in the

outlying Boards have necessitated a partial transfer of service in advance of that date to prevent service collapse. The full model, endorsed by the Regional Chief Executives in late June 2020, will operate once a hybrid theatre is established at UHH. Capital Planning work is underway with final costs expected to be known in September 2020. The estimated capital costs are included in the capital plan. The FBC is complete in service terms but awaiting final figures. Given NHSL was already financially responsible for its own vascular services at UHH, the additional revenue implications for the Board come from its share the development of a vascular lab and extra radiology cover. Additional estates, depreciation and maintenance costs will need to be assessed once the capital costs have been finalised.

The Outline Business case (OBC) for the expansion of elective activity at the Golden Jubilee National Hospital (GJNH) has already been approved. It plans to meet the future growth in a range of ophthalmic, orthopaedic and surgical procedures for the West of Scotland Boards. The responsibility for meeting existing demand and any associated backlog remains with the resident Board. The activity assumptions in the FBC are unchanged although it is noted that operating in an environment with Covid present could require a future change. The costs have been updated based on tenders and the current price base and increase NHS Lanarkshire's costs by £0.083m in year 1 giving an initial contribution of £1.684m. By 2035/36 the annual contribution for the expansion is expected to rise to £4.770m. This is on top of the c £3.7m use of GJNH prior to the planned expansion.

4. STRATEGIC CONTEXT

This paper links to the following:

Corporate objectives	☒	AOP	☒	Government policy	☒
Government directive	☒	Statutory requirement	☐	AHF/local policy	☐
Urgent operational issue	☒	Other	☐		

Strategic drivers for the vascular case are:

- National Planning Forum – Vascular Services Steering Group A Quality Framework for Vascular Services (published October 2011);
- The West of Scotland Regional Vascular Group (established 2012) and the Working Group Update of Development of West of Scotland Vascular Network (produced October 2018).

Recommendations of the Vascular Society for Great Britain and Ireland (VSGBI)

The GJNH expansion is driven by a national plan to increase elective centre capacity across Scotland. It featured in the 2016 Health and Social Care Delivery Plan.

5. CONTRIBUTION TO QUALITY

This paper aligns to the following elements of safety and quality improvement:

Three Quality Ambitions:

Safe	☒	Effective	☒	Person Centred	☒

Six Quality Outcomes:

Everyone has the best start in life and is able to live longer healthier lives; (Effective)	☒
People are able to live well at home or in the community; (Person Centred)	☐
Everyone has a positive experience of healthcare; (Person Centred)	☐
Staff feel supported and engaged; (Effective)	☐
Healthcare is safe for every person, every time; (Safe)	☒
Best use is made of available resources. (Effective)	☒

6. MEASURES FOR IMPROVEMENT

The services will be measured against the stated aims in the business cases.

7. FINANCIAL IMPLICATIONS

Vascular: The best estimates of the capital contribution were included in the opening capital plan but require to be confirmed at FBC stage. An estimate of the Lanarkshire share of the service running costs was included in the opening revenue plan but will required to be reviewed once the estates and maintenance costs are finalised. It is likely that the initial revenue estimates will be exceeded but not to the extent that would derail the project.

Elective Centre expansion: The OBC costs were built into the opening financial costs but the FBC costs are £0.083m higher in the first year due to inflation, and an increase in capital costs to adapt for Covid.

8. RISK ASSESSMENT/MANAGEMENT IMPLICATIONS

Both business cases include a risk assessment and management section.

9. FIT WITH BEST VALUE CRITERIA

This paper aligns to the following best value criteria:

Vision and leadership	☒	Effective partnerships	☒	Governance and accountability	☐
Use of resources	☒	Performance management	☐	Equality	☒
Sustainability Management	☐				

10. EQUALITY AND DIVERSITY IMPACT ASSESSMENT

The vascular business case has been assessed using the NHSL, NHSAA and NHSDG Standard Equality & Diversity Impact Assessment Document (EQIA) and Standard Impact Assessment. The evaluation did not identify any potential negative/adverse or differential impact.

The elective expansion case was subject to a detailed EQIA which was included as appendix 16A of the business case.

11. CONSULTATION AND ENGAGEMENT

The business cases have been through extensive engagement and iterations before the final model has been agreed.

12. ACTIONS FOR THE BOARD

The Board is asked to:

Approve	☐	Endorse	☐	Identify further actions	☐
Note	☒	Accept the risk identified	☐	Ask for a further report	☐

The Board is asked to:

1. Note that both business cases are now approaching the Full Business Case Stage and are likely to proceed in 2020/21;

2. Note the increased cost of the Elective centre expansion and the likelihood of an as yet fully quantified modest increase in the cost of the vascular regionalisation;

13. FURTHER INFORMATION

For further information about any aspect of this paper, please contact Mrs Laura Ace, Director of Finance.

Appendix 1: West of Scotland Regionalisation of Vascular Services

Case for Change

Vascular surgery and minimally invasive vascular procedures repair and restore the blood supply to an area of the body that is compromised. The average vascular patient is older (a third are over 75 years) and have associated co-morbidities (e.g. diabetes, renal problems, ischaemic heart disease). With a predicted 48% increase in over 75 year olds and a 64% increase in the over 85's by 2030, the demand for vascular interventions will increase significantly. As many as 50% of patients with vascular disease present urgently or as an emergency, requiring vascular services to be available on a 24/7 basis and evidence shows that outcomes are better when high risk vascular interventions are planned and performed by teams in high volume centres. There are national shortfalls in the vascular workforce, as well as a lack of imaging resource e.g. CT and MRI scanners and staff to operate and report – often patients spend longer than required in vascular beds awaiting crucial scans.

All these factors push towards regionalisation.

The NHS Scotland National Planning Forum developed a Quality Framework for Vascular Services in October 2011. This framework outlined the case to improve the way vascular services are delivered to the population of Scotland, for both complex care and local care. The framework described a tiered model for the provision of vascular services, linked to the complexity of the work undertaken. This model is outlined in Table 1.

Table 1

Tier	Description
Tier 1: Primary/ community care	The vast majority of vascular patients will be looked after within primary care by General Practitioners, practice nurses, podiatrists
Tier 2: Ambulatory care and rehabilitation	New outpatient referrals and follow-up appointments; venous surgery, minor amputations, venous access and primary vascular access; interventional radiology.
Tier 3: Complex inpatient care	Open surgical or endovascular repair of abdominal aortic aneurysm (AAA), carotid endarterectomy (CEA), or assessment and management of critical limb ischaemia (CLI – limb salvage), complex vascular access and care of vascular emergencies
Tier 4: Tertiary referral centres	Very complex, rare or highly specialist interventions (nationally designated). e.g. repair of thoracic and thoraco-abdominal aortic aneurysms (TAAA)

The Vascular Society for Great Britain and Ireland (VSGBI) also makes a series of recommendations that should be met by vascular centres. These are listed below:

- The population covered by the networks should be sufficient to generate the required volume of procedures at the arterial centre. A minimum of 800,000 is usually required for this;
- A 24/7 consultant on-call rota of 1:6 or greater for vascular emergencies, covered by a combination of vascular surgeons and interventional radiologists;
- A 24/7 critical care facility with ability to undertake mechanical ventilation and renal support and with 24/7 on-site anaesthetic cover;
- Wards for dedicated vascular patients should be available;
- At least one endovascular theatre or theatre specification endovascular suite is required, preferably with high quality imaging, advanced applications and a dedicated X-ray table (MHRA guidance);

- A minimum number of 60 abdominal aortic aneurysm (AAA) and 40 carotid procedures (elective and emergency) are undertaken per annum;
- An on-site vascular laboratory should be available;
- Hospitals, vascular surgeons and interventional radiologist should submit cases to the National Vascular Registry (NVR) and publish their outcomes in line with the National HQIP programme. Actions should be taken to ensure all outcomes are satisfactory;
- Vascular surgeons should undertake regular review of their practice and outcomes (morbidity and mortality/governance meetings).

Facilities and Infrastructure - Facilities required at a centre for complex procedures include :

- Hybrid theatre;
- CEPOD theatre for emergency vascular procedures;
- ITU/HDU;
- Diagnostics – including MR and CT angiography;
- Dedicated vascular ward – 20-25 beds for a population of 800,000;
- Vascular laboratory – 800,000 population generates circa 4,500 to 6,000 test per annum with a rising demand;
- Input of AHPs (including Social Workers);
- Rehabilitation services.

VSGBI recommend that arterial centres should be co-located with Major Trauma Centres or Units. Clear protocols and emergency transfer pathways are required if this is not possible.

Existing Arrangements

Until September 2019, Tiers 1, 2 and 3 were provided by all three Boards with the exception of some Tier 3 activity being provided in NHSL for NHSAA and in Carlisle for NHSDG patients. Since September 2019, all NHDG Tier 3 activity has been provided by NHSL.

- **NHSL** Vascular surgery service traditionally provides outpatient, diagnostic, day surgery, inpatient care and treatment at UHH. This includes Tier 2 and Tier 3 vascular services. In July 2019, UHH began a shared OOH on-call Friday to Monday and weekend rota with NHSAA. In September 2019, UHH began supporting all Tier 3 activity from NHSDG. NHSL have funding for 5 WTE Vascular Consultants to support delivery of the service. NHSL has recently been successful in recruiting to a sixth consultant post using monies from an NHSDG vacancy and this surgeon will take up post in August 2020.

- **NHSAA** Vascular surgery service provides outpatient, diagnostic, day surgery, inpatient care and treatment at University Hospital Ayr (UHA). This includes Tier 2 and Tier 3 vascular services with the exception of some endovascular Tier 3 activity being provided in UHH for NHSAA patients. Although NHSAA have funding for 4 WTE Vascular Consultants, the service is currently being provided by 2 permanent consultants with intermittent additional support from 1 locum consultant vascular surgeon and the funding from the fourth post currently deployed to employ two speciality doctors as part of the Phase 2 arrangements. Weekday emergency cover is provided at UHA with emergency weekend OHH provided by UHH since July 2019. Vascular surgery has a funded bed complement of 23 at UHA.

- **NHSDG** Vascular surgery service traditionally provides outpatient, diagnostic, day surgery, inpatient care and elective treatments at (DGRI). This has included Tier 2 and Tier 3 vascular services with the exception of some Tier 3 activity which was previously provided in Carlisle at the Cumberland Infirmary. As of September 2019 all vascular inpatient and emergency services are being provided from UHH. NHSDG have funding for 2 WTE consultant vascular surgeons.

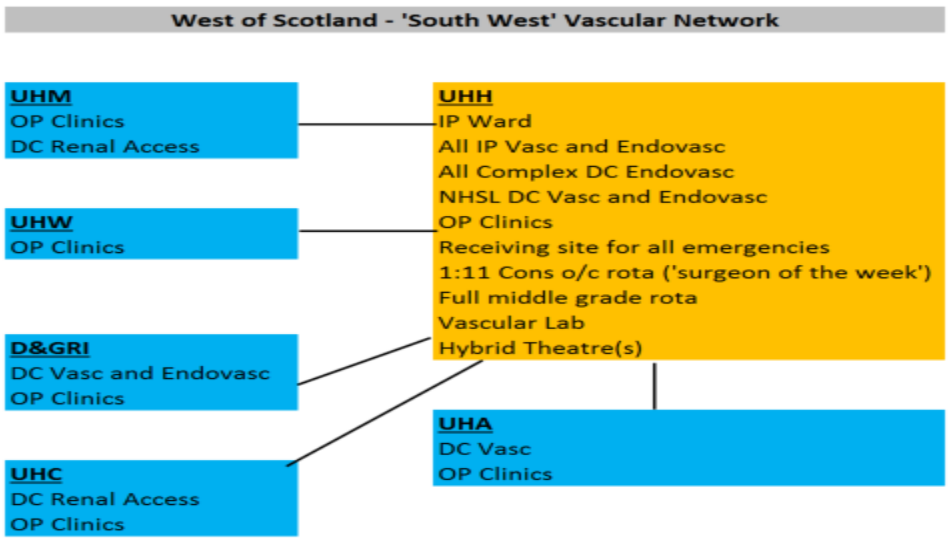
One of these posts is currently vacant and is covered by an agency locum consultant with an agreement to move the associated funding to NHSL as part of the hub workforce development in August 2020.

Proposed Arrangements

The principles for activity flows are as follows:

- Both NHSAA and NHSDG Tier 3 vascular services (complex inpatient care) will be provided on a 'hub and spoke' basis from UHH on a 24/7 basis;
- NHSAA non-arterial day case activity and outpatient services will continue to be delivered at University Hospital Ayr (UHA) and University Hospital Crosshouse (UHC) i.e. will continue as a Tier 2 non-arterial vascular unit;
- NHSDG non-arterial day case activity and outpatient services will continue to be delivered at Dumfries & Galloway Royal Infirmary (DGRI) i.e. will continue as a Tier 2 non-arterial vascular unit;
- Following their vascular intervention, patients will receive acute inpatient vascular care and concurrent rehabilitation at the UHH centre prior to the date at which they are clinically adjudged to have reached the end of their acute vascular episode of care;
- At the end of the acute vascular episode of care patients will be discharged home or repatriated to appropriate sites in their home board for ongoing rehabilitation or for ongoing acute care under a different specialty where this is required;
- Outpatient rehabilitation and reablement services (e.g. limb fitting) will continue to be delivered as is currently the case; and
- The provision of Tier 1 (primary care) and Tier 4 (tertiary care) vascular services will continue unchanged.

The Detailed Service model is as follows:



Resource Implications

Moving to the desired model involves significant reconfiguration of existing resources plus additional investment. Activity modelling suggests NHSL will use 56.6% of the bed base and 51.72% of the theatre capacity

The human resource required to support the care for this patient activity has been derived based on nationally and locally recognised tools where available as well as professional judgement. The task of disaggregating this staffing resource from the location of its current deployment and transferring it to the hub is an operational difficulty which will be encountered by NHSAA and NHSDG rather than NHSL. Where the transfer of resource takes the form of a transfer of members of staff then appropriate partnership engagement will be a prerequisite. Where transfer of resource takes the form of monies then agreement will be required regarding a recruitment timetable.

Regional agreement has been reached on the method of apportioning costs based on the relevant activity bases. Activity modelling suggests NHSL will use 56.6% of the bed base and 51.72% of the theatre capacity.

The additional investments required to implement the model are as follows:

Creation of a new theatre with interventional radiology capability (the hybrid theatre): The initial capital estimate for the build and equipping this was £ 3.000m of which NHSL's share would be £1.680m. Tenders are being sought to confirm market pricing. Equipping the ward in Hairmyres left vacant from the centralisation of Orthopaedic trauma. It is assumed NHS AA and NHS D & G will either transfer equipment or fund the purchase.

Enhancement to the Interventional Radiology Rota: At present one interventional radiologist is on call in Lanarkshire linked to the regional Percutaneous Coronary Intervention (PCI) Service. This single resource could not cover the expanded service. A new model and rota has been devised.

Creation of a Vascular Lab: A Vascular Lab is primarily a non-invasive diagnostic service which is run by specialist vascular technicians and provides information essential for the diagnosis, assessment and follow-up of vascular patients. NHSL is an outlier amongst the three Boards in not providing this service locally and patients in NHSL are currently managed inefficiently and sub-optimally by means of expensive cross sectional imaging and consultant led ultrasound. NHS L is projected to use 90.2% of this capacity and its share of the revenue costs would be £0.100m. Capital costs associated with equipping the lab are estimated at £0.075m of which NHSL's share would be £0.068m.

AHP Rehab coordinator: It is proposed this post is funded for a year to get the service up and running. NHS L's share would be £0.031m.

Facilities Costs: The additional depreciation and maintenance costs from the Hybrid theatre will be finalised once the capital costs have been ascertained.

At the time of the financial plan the additional revenue cost on top of the existing NHS L budgets were estimated at £0.162m. A small change in bed share assumptions plus the identification of additional maintenance costs suggest the final cost will be higher.

The combined staffing budget of the new regional service will be £5.737m with ward and theatre consumables plus facilities costs on top of this.

The capital costs (still to be confirmed by tender) are expected to be as follows:

	Total	NHSL	NHSAA	NHSDG
Hybrid Theatre	£3,000,000	£1,680,000	£942,300	£377,700
Vascular Lab	£75,000	£68,400	£4,700	£1,900
Ward Equipment	£150,000	£0	£135,225	£13,775
TOTAL	£3,225,000	£1,748,400	£1,082,225	£393,375

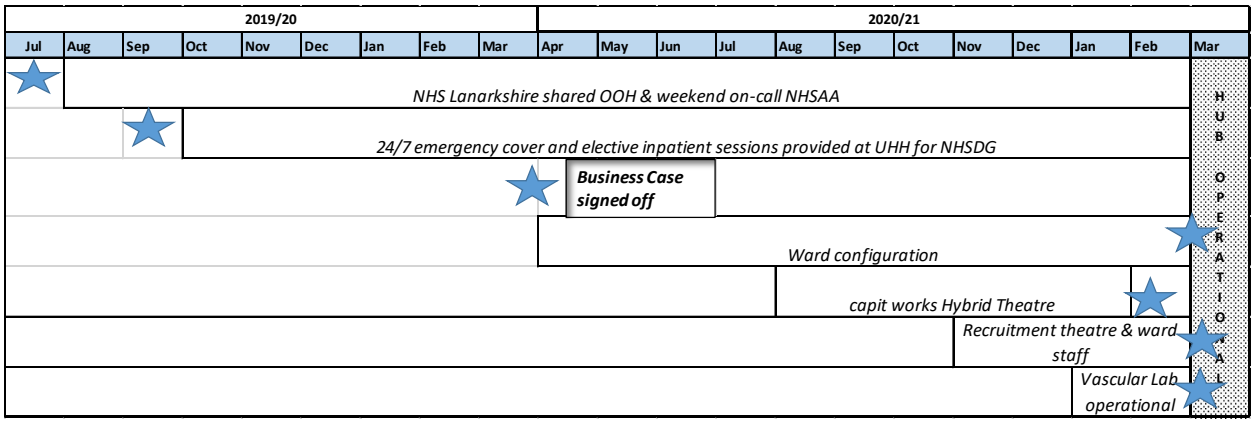
Risks

Workforce fragilities have already led to an earlier migration to regional working within the existing footprint. This project was sequenced with the separation of the orthopaedic trauma and elective work as the additional vascular beds were to be placed in the vacated ward. The earlier delay in the T & O project has already pushed the completion date from late 2019 to summer 2020 and a further delay due to Covid has extended this further to April 2021. At this stage it is still envisaged that date can be met.

There is a risk of the capital costs exceeding the initial estimates with a knock on impact on depreciation and maintenance costs. A local programme Board has been established and are currently working through equipping lists to try to maintain the project within its original envelope.

Timeline

Costs of the theatre creation are expected to be confirmed by September 2020 which would allow the cost schedules in the business case to be confirmed and the FBC to be finalised. In this regard the theatre works are slightly behind the implementation timeline below but the other service elements remain on track.



Appendix 2: Expansion of Elective Surgery Capacity at GJNH

Planned Expansion

The Scottish Government Capital Investment Group has already approved an outline business case to extend and refurbish the existing GJNH facilities to provide additional activity expanding in a phased manner between 2021 and 2035 area as follows:

- 4,113 Orthopaedic procedures;
- 1,748 General Surgery day case 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.

This capacity would be used by the West of Scotland Boards. It has been modelled based on growth projections for these specialties, not the existing demand. It assumes WoS Health Boards will manage and recover the current waiting time backlog position.

The activity projections have been signed off as reasonable by the WoS Boards. The cumulative activity for the procedures is set out in the table below.

Figure 16: Annual activity by Health Board

Annual						
All Activity	**Ayrshire & Arran**	**Dumfries & Galloway**	**Forth Valley**	**Greater Glasgow & Clyde**	**Lanarkshire**	**WoS**
2021	481	192	584	1171	1031	**3459**
2022	316	125	390	782	695	**2308**
2023	115	46	139	285	245	**830**
2024	107	43	128	267	231	**776**
2025	107	42	130	264	229	**772**
2026	99	39	119	248	214	**720**
2027	87	33	98	210	176	**603**
2028	83	32	101	213	179	**609**
2029	87	34	104	223	188	**636**
2030	87	33	107	222	188	**637**
2031	85	34	107	224	190	**639**
2032	85	33	104	221	185	**628**
2033	63	25	79	163	136	**467**
2034	9	5	25	120	73	**231**
2035	-1	1	51	100	90	**240**
Cumulative Total	**1810**	**716**	**2267**	**4713**	**4050**	**13556**

Resource Implications

The existing model is that the Scottish Government funds the fixed costs and the referring Board the marginal costs. The FBC sets out the following cost implications for each party. NHS L's contribution would starts at £1.684m in 2021/22 and rise to £4.770m in 2035/26.

Figure 17: Annual Income by Health Board and Scottish Government

Annual Funding Impact - By Health Board	NHS A&A	NHS D&G	NHS FV	NHS GG&C	NHS LANARKSHIRE	Total		Scottish Government - Staffing Support
2020 2021								1,367,035
2021 2022	939,314	371,799	952,781	1,945,383	1,684,395	5,893,672		7,605,522
2022 2023	238,476	93,369	279,465	591,854	503,794	1,706,958		1,929,219
2023 2024	138,529	53,460	152,643	334,270	270,302	949,204		1,484,708
2024 2025	131,752	50,926	143,092	323,315	263,358	912,443		1,447,078
2025 2026	135,875	53,478	150,223	328,771	269,655	938,002		1,314,027
2026 2027	105,798	40,122	121,188	281,178	221,632	769,917		773,002
2027 2028	81,479	26,742	91,854	236,097	171,656	607,827		762,361
2028 2029	89,165	32,280	107,686	254,958	192,015	676,103		644,685
2029 2030	94,205	33,953	110,377	267,755	201,131	707,421		930,841
2030 2031	94,180	33,737	115,151	273,296	207,311	723,675		773,301
2031 2032	90,654	33,924	111,907	272,726	205,258	714,468		978,864
2032 2033	84,367	31,656	110,579	259,953	194,007	680,562		494,535
2033 2034	62,725	26,102	90,545	207,661	148,704	535,738		392,843
2034 2035	28,868	13,155	54,535	342,347	186,898	625,804		108,823
2035 2036	-	-	28,322	55,840	50,068	134,230		-
Cumulative Funding Impact	2,315,388	894,704	2,620,347	5,975,402	4,770,183	16,576,024		21,006,843

The OBC costs had been profiled in to the Board's financial plan. FBC costs are higher than the OBC costs as set out in the table below.

GJNH Hospital Expansion Programme
Phase Two - Expansion of Orthopaedic Surgery, General Surgery and Endoscopy

Lanarkshire

Year	OBC	Cumulative FBC	Change
	£	£	£
21-22	1,600,931	1,684,395	83,464
22-23	2,084,132	2,188,189	104,057
23-24	2,341,197	2,458,491	117,294
24-25	2,592,075	2,721,849	129,774
25-26	2,848,882	2,991,504	142,622
26-27	3,059,249	3,213,135	153,886
27-28	3,222,576	3,384,791	162,215
28-29	3,404,928	3,576,806	171,878
29-30	3,596,132	3,777,937	181,805
30-31	3,793,151	3,985,248	192,097
31-32	3,987,991	4,190,506	202,515
32-33	4,172,278	4,384,513	212,235
33-34	4,312,951	4,533,217	220,266
34-35	4,498,105	4,720,115	222,010
35-36	4,546,715	4,770,183	223,468

The capital cost of £80.923m would be met by Scottish Government.

Risks

The FBC contains a risk register pertaining to the project.

The FBC recognises normal activity has still not been reinstated due to Covid and the existing backlog is now much greater. This however is treated as an issue separate to the business case.

Risks flagged by NHS Boards using the service include:

- the ability to sustain emergency rotas if clinicians prefer to work in a more planned environment at GJNH;
- uncertainty over funding. An initial SG assumption had been that the waiting times funding currently allocated to Boards to tackle the existing gap between demand and capacity would be used instead to fund elective centres. That would leave Boards without sufficient funding for the existing workload and for growth in procedures not covered by the GJNH expansion.

The workforce plan associated with the Business case has mitigating actions for the first risk. The funding model and the waiting times allocations NHS Boards might expect have not yet been confirmed.

Timeline

Action	Responsibility	Date
Completion of FBC	Programme Team and SRO	June 2020
FBC shared with Regional and National Planning groups	SRO	July 2020
Approval of FBC by Senior Use Group	Senior User Group	29 June 2020
Approval by Senior Management Team	Silver Command	30 June 2020
Approval of FBC by Expansion Programme Board	Programme Board	30 June 2020
Approval of FBC by NHS GJ Board	NHS GJ Board	2 July 2020
FBC Submission to CIG	Programme Board	2 July 2020
CIG FBC Approval	CIG	21 July 2020
Instruction to progress to Construction Stage	NHS GJ Board	July 2020
Construction commence	PSCP	July 2020
Construction complete	PSCP	December 2022
Commissioning Period	NHS GJ	To be agreed
Unit Opens to patients	NHS GJ	TBC