Sandwell and West Birmingham Hospitals NHS
NHS Trust

Report Title	Imaging Sustainability		
Sponsoring Executive	Rachel Barlow, Chief Operating Officer		
Report Author	Liam Kennedy, Deputy Chief Operating Officer		
Meeting	Trust Board	Date	6th December 2018

1. Suggested discussion points *[two or three issues you consider the Trust Board should focus on]*

We have remodelled our demand and capacity for imaging scans and reports. This reveals that we can manage to undertake the required scans but have a capacity shortfall in reporting. From April 2019 the Trust will be using a strategic partner to undertake some reporting. The financial impact of this has been modelled and will form part of our 2019/20 plan. The overall approach will both make the imaging department a more attractive workplace and drive certainty for referrers.

The Board is asked to consider the coherence of the plan and comment on its implementation.

2. Alignment to 2020 Vision *[indicate with an 'X' which Plan this paper supports]*

Safety Plan	x	Public Health Plan		People Plan & Education Plan	x
Quality Plan	x	Research and Development		Estates Plan	
Financial Plan	x	Digital Plan		Other *[specify in the paper]*	

3. Previous consideration *[where has this paper been previously discussed?]*

Previous version to performance management committee

4. Recommendation(s)

The Trust Board is asked to:

a.	**Discuss** the approach taken and the findings
b.	**Discuss** sustainable service model
c.	**Discuss** implementation plan and approach including risk to delivery

5. Impact *[indicate with an 'X' which governance initiatives this matter relates to and where shown elaborate]*

Trust Risk Register		Risk Number(s):				
Board Assurance Framework		Risk Number(s):				
Equality Impact Assessment	Is this required?	Y		N	x	If 'Y' date completed
Quality Impact Assessment	Is this required?	Y		N	x	If 'Y' date completed

SANDWELL AND WEST BIRMINGHAM HOSPITALS NHS TRUST

Report to Trust Board: 6th December 2018

Imaging Sustainability

1.   Background

1.1   A full Demand and Capacity model in imaging has been long overdue. The department has seen a year on year increase in activity through all modality types without the reflected workforce capacity to support a sustainable throughput. There has been failure this year to meet mandated diagnostic access standards this year and inconsistency in delivering our internal time to test and report standards.

1.2   This report focuses on both Reporting and Scanning capacity to ensure that the department has taken both into consideration when submitting sustainable options to meet the forecast demand over the next 2 years, assuming we have no backlog of work from April 2019.

1.3   The commitment within the sustainability plan is to meet a standardised set of request for test to report times (see appendix 1) which take into account strategic commitments with future revised cancer standards, urgent care demand and the integrated care system.

1.4   A strategic partnership with outsourcing providers will form part of our future sustainable service model.

2.   Methodology

2.1   The working group which comprised of the Group Director, Clinical Director, Director of Operations and Directorate Manager, Deputy Chief Operating Officer and Performance and Insight colleagues reported to the Chief Operating Officer.

2.2   The group went through all available Programmed Activities (PA's) from up to date job plans per modality as its reporting capacity. This was compared against the forecast outturn for 18/19 with a baseline increase of 1.6% for 18/19 in all areas, apart from Outpatients where the localisation figures were used.

A standard allocation of minutes per body part, were used with turn around assumptions for scan and for reporting as outlined in appendix 2. The modelling used a very granular detail for each body part to enable and accurate modelling exercise.

2.3   For scanning, all available scanners and scanning hours available were used to generate capacity. An adjustment of 5 minutes per scan was included for turnaround of patients and a 98% scanner availability was used as this is what the managed service contract states. Again the same figure as calculated as above for scanning requirement.

The modelling assumes that we start 1/4/19 with no backlog of reporting, this has been modelled into the 18/19 plan and is on track for delivery. The model also assumes a clearance of scanning backlog to less than 4 weeks as per the new set standard for routine outpatients. Both of these can be seen in appendix 3.

3. Achieving sustainability – identifying the demand and capacity gap

3.1 The findings were that for overall scanning capacity (excluding ED plain film which is only available for ED use and comfortably meets demand) for all the activity for next year, including baseline growth and the localisation figures there is enough capacity to accommodate the scanning required. There are 1,669 hours a week available against a demand of 1,464.

Table 1: shows the overall scanning capacity split by baseline, annual growth and localisation demand

SCANNING CAPACITY	Weekly Scanning hours requirement	Scanning Capacity at 98% Efficient Rate	Shortfall in hours per week
Forecast Weekly Hours	1,343	1,669	326
Forecast Weekly Hours+ Baseline growth	1,373	1,669	296
Forecast Weekly hours+ Baseline growth+localisation	1,464	1,669	206

There are some movements between site required from current practice to optimise use of capacity for example, a large proportion of the plain film capacity is available at Rowley and Neptune and this should be were non-urgent plain film is directed. There is also a small CT deficit at Sandwell but this can be accommodated at City and will be more than achievable with the new CT scanner at Birmingham Treatment Centre (BTC).

3.2 For Reporting the department is currently 47Pa's per week short of its reporting capacity. This is primarily in Plain Film (28pa's), MRI (14pa's) and CT (10Pa's). This is assumed on 85% efficiency on job plans over a 42 week period. This is based on the current funded establishment of 30.2 WTE.

The overall table below includes 10PA's additional in Mammography which can't be used to offset MRI, CT or plain film creating an additional 10Pa's shortfall on the 37 highlighted.

Table 2: shows the overall D&C for reporting PA's

REPORTING	Weekly Reporting PA requirement	100% Job Plan	90% Job Plan	85% Job Plan	85% Job Plan shortfall (PAs)
Forecast Weekly Pa's	173	179	161	152	-20
Forecast Weekly Pa's+ Baseline growth	178	179	161	152	-25
Forecast Weekly Pa's+ Baseline growth+localisation	190	179	161	152	-37

The overall demand and capacity modelling for scanning and reporting by modality can be seen in appendix 4.

4. Options for sustainable service delivery

4.1   There are several options available to imaging in order to mitigate the current reporting shortfall in a sustainable way.

The options range from:
a) Outsourcing all the 47 Pa shortfall for next year, including; CT, MRI and Plain Film
b) Recruiting into an additional 4 consultant posts and outsourcing the plain film reports
c) Recruiting to additional reporting Radiographer roles, the remaining reporting shortfall is covered through insourcing, until this recruitment is achieved.
d) A hybrid solution of all of the above, including a strategic partnership with an outsourced provider(s) for sustainability.

The options and the associated finances are outlined on the next page in table 3, with option 1 representing the worst case scenario financially, c.£250K deficit and recruitment of reporting Radiographers and Consultants the best case scenario, c. £600K benefit. The costing includes; cost associated with the reporting method identified, additional scanning cost of staff along with the In-health (MRI provider) contract and the costs outlined in the new Imaging management structure (covered in section 5.6 of the paper).

The income is associated with the unbundled HRG tariff for the localisation work and the then the remaining work will be based through the average internal trading income as part of the emergency spell tariff.

Table 3 Sustainable service options and financial summary

Financial costs	Costs for reporting (£000's)	Costs for additional scans through In Health at SGH	Cost of management structure to support development	Income from Unbundled HRG (£000's)	Income from Internal trading	Net benefit
a) Outsourcing all the 47 Pa shortfall for next year, including; CT, MRI and Plain Film	1108	197	142	709	487	**-251**
b) Recruiting into an additional 4 consultant posts and outsourcing the plain film reports	827	197	142	709	487	**30**

Financial costs	Costs for reporting (£000's)	Costs for additional scans through In Health at SGH	Cost of management structure to support development	Income from Unbundled HRG (£000's)	Income from Internal trading	Net benefit
c) Recruiting to additional reporting Radiographer roles, the shortfall is covered through insourcing, until this recruitment is achieved.	216	197	142	709	487	**641**
d) A hybrid solution of all of the above, including a strategic partnership with an outsourced provider for sustainability.	512	197	142	709	487	**345**

4.2 The future state service model includes outsourcing reporting at scale. The imaging service model will be a hybrid of the above three options, with the early part of the year requiring a large outsourced contract and the later part of the year recruitment coming into post to reduce the expenditure, whilst always retaining outsourcing as part of our sustained capacity.

The Model has taken into account 'delegated reporting', this is where departments report their own scans so reduces the requirement on imaging to report the scan but does not reduce the scanning requirement. Dexa scans, Dental scans, fracture clinic, cardiac angio and ICU plain film are the 5 main areas where this currently takes place. As part of the work implementation plan a review of all other areas will be conducted to assess whether or not there is more scope for delegated reporting. Artificial intelligence, an innovation in technology based reporting, has been thought about as part of the options for mitigating the shortfall in reporting for 19/20, however due to the lack of evidence to confirm its ability and no known national implementation to date (GIRFT, Nov 2018), we will need to do some more work on this over the next 6 months to determine how we would like to pilot an approach and the benefit it could bring. We are engaged with Siemens and IBM around different strands they could offer and they have been part of the project team to imbed this work.

4.3 Potential risks to this model include sufficient outsourcing capacity and workforce risks. The outsourcing risk will be mitigated by a relationship with more than 1 provider, contract standards to include turn around and supply times to meet specified volumes and standards and over time build our own insource flexible reporting capacity. Workforce risks are mitigated by ensuring the service is well led and becoming an employer of choice. The new leadership structure proposal gives additional leadership infrastructure capacity and skills to manage a service at this scale and growth rate. A development programme will support the new leadership team structure to embed and become a high functioning team.

5. Implementation

5.1 In order to implement any of the options outlined in **Table 3,** a governance process and project team has been set up. The project team will meet fortnightly and will be chaired by the Chief Operating Officer. This will report monthly into Operational Management Committee and the Performance Management Committee with updates on progress and provide a monthly trajectory update against the original modelling. The Improvement team will need to support documentation and potentially tracking of this plan.

5.2 A high level implementation plan can be seen in Appendix 5 which outlines the work to be completed before April 2019 to ensure the service sustainability model is achieved from April 2019. Each of the actions has dates and an assigned owner. Under each heading there is a detailed plan that will be tracked through the delivery group.

5.3 Recruitment and development of staff has already started, including 2 radiographers starting the development of the reporting radiographer programme in September. The group will ensure that adverts and recruitment material for radiographer consultants appealing for new applicants, including video messages and tours of the department based on our hot/cold future service model spilt.

5.4 Procurement discussions have started to secure the scale and standards of outsourcing assumed in this model. Assistance and prioritisation will be required from procurement and finance to take this forward at pace.

5.5 The department has lacked business intelligence to manage the scheduling, utilisation and forecasting of activity effectively. This needs urgent resolution in partnership with Performance and Insight, Siemens and imaging providers.

5.6 The Clinical Group have put forward a proposal for a new leadership structure which is designed to give both capacity and capability to deliver a sustained service and the ability continue to forecast demand and capacity alignment. This costs circa £142K which is affordable against the best case financial model for the sustainable service, but is a cost pressure in every other scenario. Working with the current team structure would be a risk to delivery. The new proposed structure is supported by the Chief Operating Officer and can be seen in Appendix 6 and a development programme will be part of the enabling approach over the next few months to optimise the contribution of the new leadership infrastructure.

6. Recommendation

6.1 The Trust Board is asked to:

a) Discuss the approach taken and the findings
b) Approve for the project team to continue to work up all options, concurrently, to ensure rapid delivery of any option; including the potential requirement for a tender process for the outsourced reporting.
c) Note the potential financial impact in 19.20 if option 1 or 2 happen.

Liam Kennedy
Deputy Chief Operating Officer
November 2018

Appendix 1:

Table showing standards from time to request to report time for all different modalities

Case Type	Reporting Time (from request to verified report)	Changes decided by the working group to meet strategic plans	Target
2ww	<14 days	5 days	100%
All chest radiographs (lung cancer)	<1 day		100%
Lung cancer pathway CT chest	<3 days		100%
ED (CT)	< 1hr		90%
ED (plain films excluding chest radiographs)	<5 days	2 days	90%
GP radiographs	<2 days		90%
Inpatient CT/MR/US/radiographs	< 24 hours		90%
GP MR/CT/ultrasound Urgent (CRIS code 5)	7 days	5 days	90%
Outpatient MR/CT/ultrasound Urgent (CRIS code 5)	7 days		90%
GP non-urgent ultrasound	14 days		90%
Outpatient non-urgent ultrasound	42 days	28 days	90%
	Time from scan to verified report		
GP MR/CT Routine	14 days		90% (All request to report <42days)
Outpatient MR/CT Routine	14 days		90% (All request to report <42days)
Oncology (CT/MR or radiograph)	<14 days	5 days	100%

Standard scanning and reporting time assumptions

Standard timings per scan, per patient, including required turnaround time.

Modality	Average time in minutes per patient for scan in minutes
Additional workload	11.1
Angiography	12.5
CT	16.0
Fluoroscopy	12.8
Mammography	21.3
MRI	19.2
Nuclear Medicine	38.3
Obstetrics	18.4
Radiology	11.5
Ultrasound	17.0
Grand Total	**16.69**

Standard time per report, per patient, for each modality

Modality	Average of Reporting Time in minutes
Additional workload	20.0
Angiography	10.9
CT	15.3
Fluoroscopy	14.2
Mammography	10.7
MRI	16.0
Nuclear Medicine	14.7
Obstetrics	0.0
Radiology	3.9
Ultrasound	3.0
Grand Total	**10.08**

Appendix 3:

Table showing the reduction of reporting backlog and clearance by 1/4/19

	03/12/2018	10/12/2018	17/12/2018	24/12/2018	31/12/2018	07/01/2019	14/01/2019	21/01/2019	28/01/2019	04/02/2019	11/02/2019	18/02/2019	25/02/2019	04/03/2019	11/03/2019	18/03/2019	25/03/2019
backlog	15000	14100	13200	12300	11400	10500	9600	8700	7800	6900	6000	5100	4200	3300	2400	1500	600
newly added/week	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
total to report	17500	16600	15700	14800	13900	13000	12100	11200	10300	9400	8500	7600	6700	5800	4900	4000	3100
outsourced vol/week	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
In-house reports/week	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
In-sourced reports/week	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600
carry forward to new week	**14100**	**13200**	**12300**	**11400**	**10500**	**9600**	**8700**	**7800**	**6900**	**6000**	**5100**	**4200**	**3300**	**2400**	**1500**	**600**	**0**

Table showing clearance of Scanning backlog by 31/3/2019

Diagnostic Test	Forecast over 6 weeks at month end Nov	Forecast over 6 weeks at month end Dec	Forecast over 6 weeks at month end Jan	Forecast over 6 weeks at month end Feb	Forecast over 6 weeks at month end March
	0	0	0	0	0
Audiology	3	1	1	1	0
Cardiology – ElectroCardiography	0	0	0	0	0
Colonoscopy	0	0	1	1	0
CT	20	15	5	1	0
Cystoscopy	1	1	1	1	0
DEXA	0	0	0	0	0
Flexi sigmoidoscopy	0	0	0	0	0
Gastroscopy	60	0	0	0	0
MRI	80	80	38	15	0
Neurophysiology	0	0	0	0	0
Non-obstetric ultrasound	200	189	45	15	0
Respiratory physiology - sleep studies	0	0	0	0	0
Urodynamics	0	0	0	0	0
Totals	364	286	91	34	0

Shows the overall Demand and capacity modelling by modality for scanning and reporting

Overall Demand & Capacity Forecast Position (By Modality):

	Forecast Demand incl Baseline Growth and Localisation	Scan time hours Required/Week	Scan Time Available/week	Shortfall in Hours	Shortfall Pas/Week (related to table 2)
Additional workload	10,085				0
Angiography	4,082	13	24	11	0
CT	46,755	252	277	25	-11
Fluoroscopy	5,463	19	27	9	-3
Mammography	7,401	64	69	5	15
MRI	26,134	202	233	31	-14
Nuclear Medicine	6,413	82	97	15	8
Obstetrics	41,763	183	206	23	0
Radiology	191,666	432	428	-4	-28
Ultrasound	46,566	216	309	92	-4
Grand Total	**386,328**	**1,464**	**1,669**	**206**	**-37 adjusted for mammography = -47 PAs**

High level implementation plan to deliver sustainability

Imaging Sustainability Implementation Plan

Task Name	Start Date	End Date	Assigned To	Status	Duration (working days)
Home Reporting Efficiency - additional 3 PM/Week, 12 session/Mth	**29/11/18**	**29/03/19**	**John Morlese**		**87d**
IT configuration to support connection required	29/11/18	30/01/19	Martin Sadler		45d
Testing system	01/02/19	29/03/19	John Morlese		41d
Optimisation of reporting radiographer	**29/11/18**	**28/03/19**	**Fiona Rotherham**		**86d**
Group sign-off for Delegated reporting - Dental, Fracture, ICU	**29/11/18**	**29/03/19**	**Sarah Yusuf**		**87d**
Registrar Reporting	**29/11/18**	**31/01/19**	**Sarah Yusuf**		**46d**
Establish level of reporting with Deanery	29/11/18	31/12/18	Sarah Yusuf		23d
Engage with SWBH Registrars with the revised reporting criteria	29/11/18	31/01/19	Sarah Yusuf		46d
Engage with wider Specialist Registrar (SPR) Community in West Midlands	29/11/18	31/01/19	Sarah Yusuf		46d
New CT scanner at City	**29/11/18**	**29/03/19**	**Jonathan Walters**		87d
Deliver detailed programme	29/11/18	29/03/19	Dawn Webster		87d
Backlog clearance	**29/11/18**	**29/03/19**	**Jonathan Walters**		**87d**
Weekly monitoring via Patient Tracker List	29/11/18	29/03/19	Jonathan Walters		87d
Test and report	29/11/18	29/03/19	Jonathan Walters		87d
Outsourcing	**26/11/18**	**29/03/19**	**Jonathan Walters**		**90d**
Engagement with Procurement (stocktake current contractual arrangements and agree process forward)	26/11/18	11/12/18	Jonathan Walters	In Progress	12d
KPI & Tendering	29/11/18	15/01/19	Jonathan Walters		34d

Task	Start	End	Owner	Duration
IT Infrastructure	29/11/18	29/03/19	Jonathan Walters	87d
Recruitment to the Management System	**29/11/18**	**15/02/19**	**Fiona Rotherham**	**57d**
Rota Manager	**29/11/18**	**31/01/19**	Fiona Rotherham	**46d**
Patient Access manager	**29/11/18**	**31/01/19**	Fiona Rotherham	46d
Business Intelligence and Data Analyst	**29/11/18**	**15/02/19**	Fiona Rotherham	57d
Imaging Department Assistant (IDA)	**29/11/18**	**31/01/19**	Fiona Rotherham	46d
Design of Leadership Team Development Programme	**29/11/18**	**31/01/19**	**Stephanie Cowin**	**46d**
Develop Dashboard	**29/11/18**	**15/02/19**	**Liam Kennedy**	**57d**
Engage HSS, Siemens, SWBH IT to develop Dashboard	29/11/18	15/02/19	Liam Kennedy	57d
Artificial Intelligence	**29/11/18**	**29/03/19**	**John Morlese**	**87d**
Recruit Consultant x 4	**29/11/18**	**31/07/19**	**Sarah Yusuf**	**175d**
Consult with the Royal College	29/11/18	29/03/19	Sarah Yusuf	**87d**
Advertisement out	29/11/18	31/05/19	Sarah Yusuf	132d
Candidate accept appointment	29/11/18	31/07/19	Sarah Yusuf	175d
Recruit Rolling Radiographer	**29/11/18**	**31/01/19**	**Fiona Rotherham**	**46d**
Design development trajectory	29/11/18	31/01/19	Lead Radiographer	46d
Make offer to trainee radiographers	29/11/18	31/12/18	Stephanie Cowin	23d
New Scanner (post-March 2019)	**29/11/18**	**30/09/19**	**Jonathan Walters**	**218d**
CT at BTC	29/11/18	30/09/19	Dawn Webster	218d
MRI at BTC	29/11/18	30/09/19	Dawn Webster	218d

Proposed imaging leadership structure