

Reporting to:	Trust Board – 1st December 2016
Title	The Modernisation of the MRI Scanners in Order to Support Service Transformation and Increase Productivity
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Previously considered by	Sustainability Committee (October 2016); Capital Planning Group (July, September and October 2016); Operational Risk Group (July – October 2016); Radiology Board (July 2016); Support Service Board (July 2016)
Executive Summary	<p>This business case, recommending the replacement of the two MRI scanners in SaTH and the purchase of an additional MRI by Royal Shrewsbury League of Friends had been approved by the Sustainable Committee; Capital Planning Group; Support Service Board and Radiology Board.</p> <p>The outcome of the business case will support the repatriation of patients from outside the county back into SaTH and further expansion of the MRI service. It also has the support of several SaTH Consultant Clinicians across multiple specialties, as the new MRI service will improve the management of their patients and potentially the clinical outcomes.</p> <p>With the present MRI scanners the Radiology department is not able to provide a reliable service to the people of Shropshire and surrounding areas, due to the multiple breakdowns of the two scanners. The cancelling and rearranging of appointments has had a detrimental impact on patient services for in-patient, outpatients, A&E and GP referrals. In 2015/16 the existing MRI scanners brought an income of around £1.7M into the Trust.</p> <p>To maintain the current state the two 11-year-old scanners, which are the oldest scanners used in an acute hospital need to be replaced. The maintenance providers have issued the Trust with ‘best intent’ maintenance contracts for both scanners, which means that they cannot guarantee to repair the systems, to achieve the 98% uptime or guarantee supply of spare parts.</p> <p>There is a 5-6 month lead-time for the commissioning of the new MRI scanners. Radiology would prefer to proactively plan for the replacement of these scanners rather than start the replacement project once the equipment is beyond repair.</p> <p>Even though the MRI department have implemented multiple efficiency changes, the demand exceeds the maximum available capacity. The additional capacity is required to meet the increasing demand of over 20% on the service over a 12-month period. This increase in activity is expected to continue. To achieve future state there is a need to purchase a third scanner in addition to the two replacement scanners.</p> <p>All the new MRI scanners will have specifications that will provide the capability of repatriating patients that at present have to be scanned out of county. The new scanners will also provide additional capacity to meet the new NICE cancer requirements of ‘direct to test’ for GPs.</p> <p>The Royal Shrewsbury League of Friends has generously chosen to raise £1million pounds for the purchase of the additional scanner as part of their 50th Anniversary celebrations.</p>

Strategic Priorities 1. Quality and Safety 2. People	<input checked="" type="checkbox"/> Reduce harm, deliver best clinical outcomes and improve patient experience. <input checked="" type="checkbox"/> Address the existing capacity shortfall and process issues to consistently deliver national healthcare standards <input checked="" type="checkbox"/> Develop a clinical strategy that ensures the safety and short term sustainability of our clinical services pending the outcome of the Future Fit Programme <input checked="" type="checkbox"/> To undertake a review of all current services at specialty level to inform future service and business decisions <input checked="" type="checkbox"/> Develop a sustainable long term clinical services strategy for the Trust to deliver our vision of future healthcare services through our Future Fit Programme <input checked="" type="checkbox"/> Through our People Strategy develop, support and engage with our workforce to make our organisation a great place to work
3. Innovation 4. Community and Partnership 5. Financial Strength: Sustainable Future	<input checked="" type="checkbox"/> Support service transformation and increased productivity through technology and continuous improvement strategies <input type="checkbox"/> Develop the principle of 'agency' in our community to support a prevention agenda and improve the health and well-being of the population <input type="checkbox"/> Embed a customer focussed approach and improve relationships through our stakeholder engagement strategies <input type="checkbox"/> Develop a transition plan that ensures financial sustainability and addresses liquidity issues pending the outcome of the Future Fit Programme
Board Assurance Framework (BAF) Risks	<input checked="" type="checkbox"/> If we do not deliver safe care then patients may suffer avoidable harm and poor clinical outcomes and experience <input checked="" type="checkbox"/> If we do not work with our partners to reduce the number of patients on the Delayed Transfer of Care (DTC) lists, and streamline our internal processes we will not improve our 'simple' discharges. <input checked="" type="checkbox"/> Risk to sustainability of clinical services due to potential shortages of key clinical staff <input checked="" type="checkbox"/> If we do not achieve safe and efficient patient flow and improve our processes and capacity and demand planning then we will fail the national quality and performance standards <input type="checkbox"/> If we do not get good levels of staff engagement to get a culture of continuous improvement then staff morale and patient outcomes may not improve <input checked="" type="checkbox"/> If we do not have a clear clinical service vision then we may not deliver the best services to patients <input checked="" type="checkbox"/> If we are unable to resolve our (historic) shortfall in liquidity and the structural imbalance in the Trust's Income & Expenditure position then we will not be able to fulfil our financial duties and address the modernisation of our ageing estate and equipment
Care Quality Commission (CQC) Domains	<input checked="" type="checkbox"/> Safe <input checked="" type="checkbox"/> Effective <input checked="" type="checkbox"/> Caring <input checked="" type="checkbox"/> Responsive <input checked="" type="checkbox"/> Well led
<input type="checkbox"/> Receive <input type="checkbox"/> Review <input type="checkbox"/> Note <input checked="" type="checkbox"/> Approve	Recommendations 1. The Trust Board is asked to approve the business case. Option 3 c with Option 4 - the replacement of the current two MRI scanners and a purchase of an additional MRI scanner, which will be funded by the League of Friends, this is consistent with the recommendation from the Sustainability Committee. 2. It is also asked to recognise the purchase of an additional MRI scanner, which will be funded by the League of Friends.

Business Case: The Modernisation of the MRI Scanners in Order to Support Service Transformation and Increase Productivity

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1. Executive Summary

- **The MRI Service in SaTH is presently facing two critical problems**

- 1) The increasing unreliability of the two MRI scanners and their out of date technology is leading to approximately a 5% downtime on the scanners. This is having a negative impact on the Trust's KPIs and patient experience.
- 2) The increasing demand for MRI scans has exceeded the present scanning capacity even though efficiency improvements have been undertaken. This raises serious issues about the Trust's ability to respond to growth pressures and repatriation of patients

Both of these issues are preventing the repatriation of patients back into SaTH, causing a loss of income.

- **Over the past four years, the MRI scanners have become increasingly more unreliable. Sometimes the downtime equates to days other times it is the constant breakdowns throughout the working day.** This type of breakdown adds around 10 minutes each time to a scan, because a patient has to be taken out of the scanner in order to reboot it. The cause was identified as lack of processing power of the MRI scanners due to the age of the technology. The engineers' solution was to wait until the end of the MRI list and reconstruct all the scans for each patient then. This has reduced the total number of patients that can be scanned per MRI list so that images that in previous years could be reconstructed during a scan can now only be reconstructed whilst the scanner is not scanning patients.
- **At PRH in 2013, 69 lost appointments were due the scanner being down for days in 2016 (year to date) the number of appointments lost had increased to 181. This caused patients to have their appointments cancelled on the day of their scan, some on more than on one occasion.** Additional lists that had to be undertaken resulted in additional work for the appointment staff. It also meant that the patients of Shropshire have poor experience of the MRI service provided by the Trust
- The total amount of downtime so far in 2016/17 equates to 5% this equates to potentially £96,158. This is a fivefold increase on last year.
- **The technological capability of the MRI scanners has had a direct impact on Radiology's ability to retain and recruit professional staff. If nothing is done in response to the increasing unreliability then Radiology will lose staff.** These staff work in other areas within Radiology in addition to MRI. Due to the dated technology SaTH is unable to offer many modern MRI scanning techniques leading to inferior diagnostic capability compared to neighbouring Trusts such as The Robert Jones and Agnes Hunt Orthopaedic Hospital (RJAH), The University Hospital of the North Midlands (UHNM), University Hospital Birmingham (UHB) and Wrexham Maelor, all of which have these facilities. This means that SaTH refers a number of patients to these sites, for MRI scans, at a **cost to the Trust of £134K per annum**. This is of great concern to the Consultant Radiologist
- **The greatest risk to the Trust is the 5-6 month lead-time for the commissioning of the new MRI scanners once the order is placed.** Radiology would prefer to proactively plan for the replacement of these scanners rather than start the replacement project once the equipment is beyond repair. Especially, as there is no spare MRI capacity in surrounding Trusts or in the private sector.

- The MRI service is struggling to achieve waiting times due to insufficient capacity to meet the year on year increase in demand. The service has seen **increasing number of referrals** from 15,565 in 2012/13 to 21,617 in 2015/16, **an increase of 39% in 4 years**.
- In the latest **national audit on the use of high-end Radiology equipment**, it was stated that a scanner with a throughput of **8,000 patients per year was a highly utilised piece of equipment**. **SaTH's MRI scanners each scan 11,000 patients per year**.
- The do nothing option in response to the situation described leaves the Trust with an affordability problem due to loss of income, from direct access and unbundled tariff. The **2015/16 income generated** by the MRI department for the Trust is recorded as **£1,923,161**. It will also have a detrimental impact on the Trust's resilience to meet national targets such as A&E 4 hour target, 18 week RTT, Cancer Targets and 6-week diagnostic wait targets once the scanners are beyond repair. **The consequence of doing nothing is that following the trend over the past four years there will be an increase in the level of downtime**.
- The key risk for the Trust is the increasing likelihood that one or both, of the MRI scanners will suffer a **complete breakdown** rendering the units out of action. This would burden one or both, of the acute sites with no MRI service. **None of the surrounding Trusts or Private Hospitals have any spare capacity to take the workload. The mitigation will be to lease a mobile MRI scanner. The lead-time for this is 3 months**. In this eventuality, the Trust would suffer extensive care, performance and financial penalties due to loss of income, lack of service (until a mobile unit is available to come to site), the cost of such a unit and the breaches of the Trust's key performance targets.
- **The purpose of this paper is to define the current state including the risks within the MRI service and to identify options (1, 2 and 3). These options address the reliability issues that are negatively affecting service delivery and Trust targets. It will also describe a forth option (option 4), which defines a future state which provides resilience for the Trust. This will allow the Trust to repatriate Shropshire patients back to SaTH and have their care closer to home. It will also provide future capacity for a nationally increasing demand on MRI services. The RSH League of Friends has offered to purchase the additional MRI scanner providing the Trust replace the two current MRI scanners.**

OPTIONS TO MEET CURRENT STATE

1. Do nothing
2. Lease two mobile scanners
- 3a. Purchase two replacement MRI scanners
- 3b. Commercial Operating Lease for the replacement of two MRI scanners
- 3c. Department of Health operating lease for the replacement of two MRI scanners

OPTION TO MEET FUTURE STATE

- 4 Purchase a MRI scanner **in addition** to the two replacement scanners discussed in option 3.

2. Current Service Profile

2.1 Background

SaTH currently has a fleet of two MRI scanners, one of which is sited at the Princess Royal Hospital (PRH) and one at The Royal Shrewsbury Hospital (RSH). The MRI service is utilised by nearly all the specialities within the Trust. The service is an integral part of some of the Trust's key performance targets, including 18 weeks RTT, 2 weeks cancer targets, 4 hour Accident and Emergency waiting times and 6 weeks diagnostic waiting time targets.

MRI provides income for the Trust from funding streams, such as un-bundled outpatient (OP) tariffs, GP direct access and the cross charging for services provided to external users such as the Community Trust. **During the last financial year, the MRI service generated a total income of £1,923,161.**

MRI is often the scanning modality of choice, because it offers some of the best diagnostic sensitivity and specificity without the use of ionising radiation such as with Computed Tomography (CT). This is why MRI is often the **first choice for scanning the paediatric population.**

SaTH's MRI scanners are not able to perform several examinations. This is mainly due to the lack of physical and technological capabilities, which mean patients have to be transferred to external providers for their imaging. The most significant of these include:

- Cardiac imaging
- Small Bowel imaging
- Scanning under general anaesthetics (GA)
- Bariatric imaging
- Detailed Musculoskeletal imaging
- Breast screening of high risk patients
- SaTH's orthopaedic trauma patients were referred to RJAH for MRI imaging,

This has a negative impact on patients' experience, as care is not offered close to home. It also has a financial cost to the Trust of circa £134K.

A lack of access to modern/advanced scanning facilities means that patients require referral to UHNM and UHB for cardiac MRI imaging. Radiology has recorded around 100 patients referred externally for this test over the last year, again at the detriment of patient experience and financial cost. External referrals also include imaging of bariatric and claustrophobic patients as modern MRI scanners offer a wider bore, reducing patient anxiety and facilitating the needs of the bariatric population.

It has been identified that Radiology has difficulty in recruiting Consultant Radiologists and retaining trained MRI radiographers. The Trust currently has a vacancy for four Consultant Radiologist posts. They have failed to recruit to the posts for a number of years despite multiple drives. Many factors can be attributed to this, including a national shortage of Consultant Radiologist (HEE, 2015). However, limited access to modern imaging facilities can be a deterrent for any possible applicants and has been stated as a reason by some potential candidates for not wanting the post.

3. Current Risks

The most substantial risk to the Trust is posed by the reliability issues of the MRI scanners linked to high through put, old technology and its age. The 11years old MRI scanners are the oldest commissioned MRI scanners nationally. Demand is currently above capacity and the service is not

able to sustain further growth. Any additional breakdowns, leading to downtime, will have a negative impact on patient care, the diagnostic targets and subsequently the Trust's key performance targets. There is no spare MRI capacity at any of the other local NHS or Private providers.

There is a risk of the MRI scanners failing completely and the equipment maintenance and service providers are no longer contractually obliged to offer a level of service cover that guarantees service uptime. If either, or both, of SaTH's MRI scanners were to fail, and the Trust wanted to maintain its MRI service the Trust would need to request the services of a private company to provide a mobile unit to maintain some level of service.

The mobile unit have very specific criteria regarding the examinations undertaken and the type of patient scanned. This will have a negative impact on the patient waiting times. In-patients would have to be transferred inside the hospital to a MRI safe trolley before being transported across the car park for their scan. Recent quotes from NHS Supply Chain, based on a similar 12-hour day to our current service, are over £2000 per day. Highlighted by recent investigation, another risk caused by the reliance on an external private provider, is that for a large amount of time all units are out on long-term contracts providing additional services to maintain waiting times at other centres. A recent request for the provision of a mobile MRI unit had a lead-time of 3 months; this is variable dependent upon demand.

4. Options Appraisal – Financial Current State (Options 1,2 &3)

4.1 Financial Appraisal

Financial Summary - To Meet Current Demand															
	Option 1			Option 2			Option 3A			Option 3B			Option 3C		
	Do nothing			Lease of 2 mobile MRI scanners			Purchase two replacement MRI scanners			Operating lease for the replacement of two MRI scanners			Department of Health operating lease for the replacement of two MRI scanners		
Years	Income £000	Expenditure £000	Contribution £000	Income £000	Expenditure £000	Contribution £000	Income £000	Expenditure £000	Contribution £000	Income £000	Expenditure £000	Contribution £000	Income £000	Expenditure £000	Contribution £000
1	(96)	0	(96)	(1,143)	(1,246)	(2,389)	0	(61)	(61)	0	2	2	0	(95)	(95)
2	(192)	0	(192)	(1,143)	(1,248)	(2,391)	0	(215)	(215)	0	(155)	(155)	0	(95)	(95)
3	(288)	0	(288)	(1,143)	(1,249)	(2,392)	0	(206)	(206)	0	(155)	(155)	0	(95)	(95)
4	(385)	0	(385)	(1,143)	(1,249)	(2,392)	0	(196)	(196)	0	(154)	(154)	0	(94)	(94)
5	(481)	0	(481)	(1,143)	(1,249)	(2,392)	0	(187)	(187)	0	(153)	(153)	0	(93)	(93)
6	(577)	0	(577)	(1,143)	(1,249)	(2,392)	0	(177)	(177)	0	(152)	(152)	0	(92)	(92)
7	(673)	0	(673)	(1,143)	(1,249)	(2,392)	0	(167)	(167)	0	(152)	(152)	0	(92)	(92)
Total	(2,692)	0	(2,692)	(8,001)	(8,739)	(16,740)	0	(1,207)	(1,207)	0	(921)	(921)	0	(659)	(659)
Capital Costs		0			0			(3,071)			(1,326)			(1,326)	
Total Cost		(2,692)			(16,740)			(4,278)			(2,247)			(1,984)	

The above table illustrates:

- Option 1 – Do nothing, the total amount of downtime so far in 2016/17 is 5%, which for the full year equates to a loss of income of £96k. Based on a 5% increase in downtime each year, total loss of income over the 7-year period is £2,692k. The 5% increase year to date in 2016/17 is a fivefold increase on last year. It is likely that the scanners will not be able to function for much longer and total failure of both scanners will result in the Trust losing circa £1,923,161 per year in income. The Trust will also fail the national targets with the potential of financial penalties.
- Option 2 – creates an income and expenditure cost pressure to the Trust over the seven year period of £16,740k because in not choosing to replace the current MRI scanning

machines would result in the need to hire two mobile scanners as other local NHS providers/private providers do not have the capacity to accommodate SaTH's activity.

- Option 3A – Replacing the two existing scanners through the capital programme would result in a capital investment of £3,071k and creates an income and expenditure cost pressure to the Trust over the seven year period of £1,207k (circa £200k pa).
- Option 3B – considers replacing the two MRI scanners through a commercial operating lease and creates an income and expenditure cost pressure to the Trust over the seven-year period of £921k (circa £150k pa). This option also requires capital investment of £1,326k for the enabling works.
- Option 3C – considers replacing the two MRI scanners through a Department of Health operating lease and creates an income and expenditure cost pressure to the Trust over the seven-year period of £659k (circa £95k pa). This option also requires capital investment of £1,326k for the enabling works.

Whilst there is a gap in affordability (ranging between approximately £100k to £200k pa) a potential solution exists based on the purchase of an additional scanner (See below Future State and an option 4)

5. Future State – Operational challenges in the Future

Even when the present MRI scanners have been replaced with new scanners, there is insufficient capacity to meet sustained increases in demand despite the efficiency changes. It has also been identified that the new scanners will have the technical capability of undertaking the scans we currently send out of county to be undertaken. Unfortunately, there is no capacity to repatriate these patients back to SaTH. The solution would be an additional scanner this would also provide resilience to the Trust for the MRI service. The League of Friends has offered to purchase an additional scanner as part of their 50th anniversary celebrations.

Judging the scale of the growth is problematic, below are some indicators, which supports the need to grow capacity to meet future increased demand for MRI scanning:

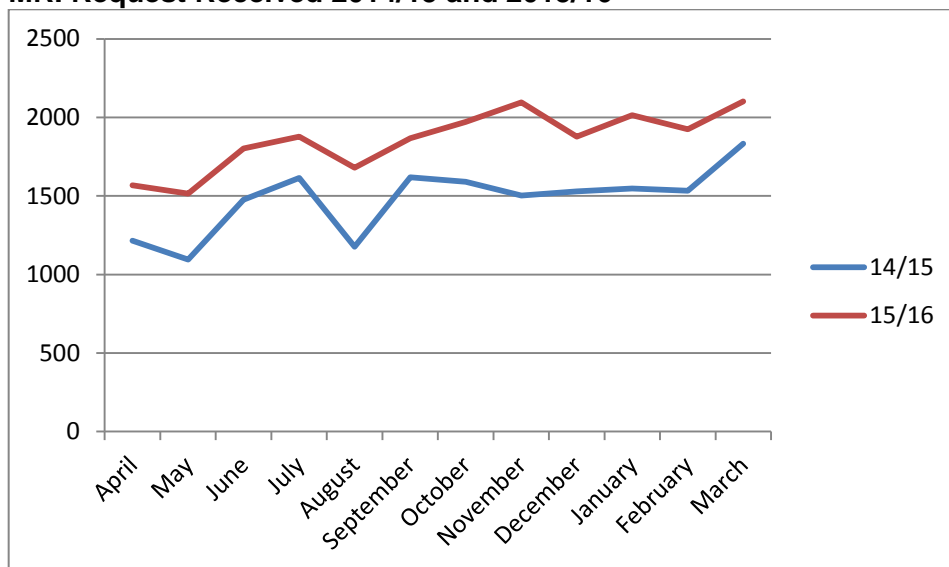
- The MRI service within SaTH is experiencing dramatic increases in referrals year on year. So far, the service has been able to absorb the increases in demand through improvements in efficiency previously discussed.

2012/13	15,565 examinations were performed	% ↑ in activity
2013/14	15,918 examinations were performed	↑2.3%
2014/15	16,746 examinations were performed	↑5.2%
2015/16	21,617 examinations were performed	↑29%

- The table above demonstrates the increasing numbers of examinations performed over the last four financial years with the same fleet of two MRI scanners. These figures demonstrate an increase of activity year on year.

The increase in activity is in response to the increase in demand. (See graph below)

MRI Request Received 2014/15 and 2015/16



- A major stimulus for the increase in demand for MRI services has been the introduction of GP Direct access as demonstrated below:

Patient Type	Total 2014/15	Total 2015/16	% Growth
Total MRI	16,746	21,617	29%
A&E/Emergency Assessment	72	119	65%
GP/Direct Access	2426	5439	124%
In -patient	2302	2324	1%
Out-patients	11877	13735	16%

- The Radiology dashboard data shows a 124% increase in GP direct access referrals between 2014/15 and 2015/16.
- GP direct access is a service that is widely supported including in the guidelines published by NICE on Cancer Management (NG12). In their supporting documentation for NG12, NICE describe how its implementation will significantly increase the resources required within Radiology to accommodate the GP direct access element of the guidelines.

All GP direct access scans have associated tariffs, which present themselves as income for the Trust:

HRG code	HRG name	Tariff (including cost of reporting) (£)	Cost of reporting (£)
RA01A	Magnetic Resonance Imaging Scan, one area, no contrast, 19 years and over	124	22
RA01B	Magnetic Resonance Imaging Scan, one area, no contrast, 6 to 18 years	133	22
RA01C	Magnetic Resonance Imaging Scan, one area, no contrast, 5 years and under	153	22
RA02A	Magnetic Resonance Imaging Scan, one area, post contrast only, 19 years and over	145	22
RA02B	Magnetic Resonance Imaging Scan, one area, post contrast only, 6 to 18 years	164	22
RA02C	Magnetic Resonance Imaging Scan, one area, post contrast only, 5 years and under	179	22
RA03Z	Magnetic Resonance Imaging Scan, one area, pre and post contrast	184	22
RA04Z	Magnetic Resonance Imaging Scan, two to three areas, no contrast	158	22

- NHS Benchmarking (2015) demonstrates that this trend is only likely to increase for MRI and the service is already at full capacity. Onwards from this point, any increases in demand on the service will begin to present themselves as a breach of diagnostic targets.
- MRI cannot support any further service expansion, such as NG12; it will also be unable to repatriate the potential services new scanners could provide without any addition in capacity
- It is recognised through NHSE benchmarking that there will be a growth in referrals of around 10%.
- Young people who suffer from Crohn's disease should have an MRI scan for imaging their condition. In this Trust at present, we have to image using CT, which is a suboptimal examination and generates a high radiation dose to, a relatively young patient population.
- SaTH's MRI scanners are not able to perform cardiac imaging and so all patients have to be outsourced to UHNS and UHB (repatriation of current outsourced activity is already assumed in the financial appraisal at £134k cost avoidance).
- The MRI scanners do not meet the required standard to be considered for the breast imaging of young high-risk patients. These patients are currently scanned at other centres and are a loss of income for the Trust.
- Bariatric patients have to be scanned out of county.
- Many clinical trials requests have to be turned down because the scanners do not meet the required specification due to lack of technological capability and age. This is another loss of income.
- Based on the actual activity in the first five months of 2016/17 the projected annual growth is 15%. In addition to this, it is expected that the introduction of NG12 will result in an increase in MRI demand.
- National demographic growth is estimated at 2.6% per annum.
- Cardiac MRI activity is expected to rise by 20% for the first 3 years and 5% thereafter when the new scanner is commissioned. The total number is expected to be about 1000 according the British Cardiac MRI Society over a 5-year period. Repatriation of 100 patients from QEH has been agreed.
- There will be a conversion of Radiology skeletal surveys to MRI skeletal scans in line with NICE guidelines for the staging of myeloma patients. This will be approximately 75 patients per year, with an expectation that the referral numbers will increase but the percentage is unknown. This will improve patient management.

6. Optional Appraisal – Financial Future State (Option 4)

Financial Summary - To Meet Future Demand

Future Demand	Option 4		
	Purchase of an additional MRI Scanner		
Years	Income £000	Expenditure £000	Contribution £000
1	0	17	17
2	0	(61)	(61)
3	0	(61)	(61)
4	0	(60)	(60)
5	0	(59)	(59)
6	0	(58)	(58)
7	0	(58)	(58)
Total	0	(342)	(342)
Capital Costs		(540)	
Total Cost		(882)	

Financial Summary - To Meet Current & Future Demand															
	Option 1			Option 2 & Option 4 Combined			Option 3A & Option 4 Combined			Option 3B & Option 4 Combined			Option 3C & Option 4 Combined		
	Do nothing			Lease of 2 mobile MRI scanners & purchase of additional scanner			Purchase two replacement MRI scanners & purchase of additional scanner			Operating lease for the replacement of two MRI scanners & purchase of additional scanner			Department of Health operating lease for the replacement of two MRI scanners & purchase of additional scanner		
Years	Income £000	Expenditure £000	Contribution £000	Income £000	Expenditure £000	Contribution £000	Income £000	Expenditure £000	Contribution £000	Income £000	Expenditure £000	Contribution £000	Income £000	Expenditure £000	Contribution £000
1	(96)	0	(96)	(1,143)	(1,228)	(2,371)	0	(43)	(43)	0	20	20	0	(78)	(78)
2	(192)	0	(192)	(1,143)	(1,309)	(2,452)	0	(276)	(276)	0	(216)	(216)	0	(157)	(157)
3	(288)	0	(288)	(1,143)	(1,311)	(2,453)	0	(267)	(267)	0	(217)	(217)	0	(157)	(157)
4	(385)	0	(385)	(1,143)	(1,310)	(2,452)	0	(256)	(256)	0	(215)	(215)	0	(155)	(155)
5	(481)	0	(481)	(1,143)	(1,309)	(2,451)	0	(246)	(246)	0	(213)	(213)	0	(153)	(153)
6	(577)	0	(577)	(1,143)	(1,308)	(2,450)	0	(235)	(235)	0	(211)	(211)	0	(151)	(151)
7	(673)	0	(673)	(1,143)	(1,308)	(2,450)	0	(225)	(225)	0	(211)	(211)	0	(151)	(151)
Total	(2,692)	0	(2,692)	(8,001)	(9,081)	(17,082)	0	(1,549)	(1,549)	0	(1,263)	(1,263)	0	(1,000)	(1,000)
Capital Costs		0			(540)			(3,248)			(1,503)			(1,503)	
Total Cost		(2,692)			(17,622)			(4,797)			(2,766)			(2,503)	

Activity Sensitivity Analysis										
	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total	
	HRG	HRG	HRG	HRG	HRG	HRG	HRG	HRG	HRG	HRG
2015/16 Outturn Activity	14,335									
Growth Assumptions										
2%		287	292	298	304	310	317	323	2,131	
4%		573	596	620	645	671	698	726	4,529	
6%		860	912	966	1,024	1,086	1,151	1,220	7,220	
8%		1,147	1,239	1,338	1,445	1,560	1,685	1,820	10,233	
10%		1,434	1,577	1,735	1,908	2,099	2,309	2,540	13,600	
12%		1,720	1,927	2,158	2,417	2,707	3,032	3,395	17,355	
14%		2,007	2,288	2,608	2,973	3,390	3,864	4,405	21,535	
16%		2,294	2,661	3,086	3,580	4,153	4,817	5,588	26,179	
18%		2,580	3,045	3,593	4,240	5,003	5,903	6,966	31,329	
20%		2,867	3,440	4,128	4,954	5,945	7,134	8,561	37,030	

Note:

The 2015/16 outturn activity of unbundled and GP direct access HRGs of 14,335 (16,728 examinations) is achieved by 2 MRI scanners working 7 days a week (excluding bank holidays) for 12 hours per weekday and 8 hours per weekend day = 7,736 hours p.a. Giving 1.85 HRG per hour.

One additional MRI scanner working 5 days a week for 8 hours a day would give 2,024 hours pa, equating to 3,744 HRGs.

The repatriation of patients will require approximately 27% of this additional capacity leaving 2,733 HRGs available.

Additional capacity over and above this will be available if the use of this machine extends to 7 days with extended weekday working.

Income Sensitivity Analysis												
	Unbundled	Direct	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total	
	£000	Access	£000	£000	£000	£000	£000	£000	£000	£000	£000	
2015/16 Outturn	1,302	621	1,923									
Growth Assumptions												
2%				38	39	40	41	42	42	43	286	
4%				77	80	83	87	90	94	97	608	
6%				115	122	130	137	146	154	164	969	
8%				154	166	179	194	209	226	244	1,373	
10%				192	212	233	256	282	310	341	1,825	
12%				231	258	289	324	363	407	456	2,328	
14%				269	307	350	399	455	518	591	2,889	
16%				308	357	414	480	557	646	750	3,512	
18%				346	408	482	569	671	792	935	4,203	
20%				385	462	554	665	798	957	1,149	4,968	
Note:												
Unbundled activity is generated from SaTH referrals												
Direct Access activity is generated from GP referrals												

The above tables illustrate:

- Option 4 – consider the capital purchase of an additional MRI scanner through donated funds which has been agreed ‘in principle’ with RSH League of Friends. This option requires a capital investment of £540k for the enabling works and creates an income and expenditure cost pressure over the seven-year period of £342k (circa £60k pa).
- This option would negate the requirement for the hire of a mobile unit at RSH and would reduce the capital requirement in option 3A, 3B and 3C by £363k. The purchase of a third MRI scanner would enable the Trust to take advantage of a multi-purchase agreement resulting in a reduction in capital investment of £50k on option 3A – the purchase of two replacement MRI scanners.
- With an additional MRI scanner, this will enable the Trust to repatriate patients and reduce costs to the Trust by £134k per annum (already assumed in calculations).
- As demonstrated by the table above, the cost pressure introduced by the purchase of an additional scanner of circa £60k pa will be covered by additional income received at approximately 3% increase in activity.
- As described in the Current State, you will recall that there is a gap in affordability ranging between approximately £100k to £200k pa depending upon the option chosen, as can be seen from the table above this level of additional income will be achieved at 6% to 10% growth.
- In total, the cost pressure of resolving the current and future state of between £160k to £260k will be achieved at 8% to 14% growth.
- The activity sensitivity analysis table above demonstrates that the additional scanner would provide enough capacity to accommodate a 14% growth.
- Indicators of growth have been described in Section 5 above.
- It is expected that once the tipping point for the service (see above activity sensitivity analysis) has been reached the Radiology Department will be required to provide the Trust

with a further business case for an additional scanner to meet the increased demand of the service.

- The situation of the MRI scanner will be sited according to the outcome of the Sustainable Service Project.

7. Options Appraisal: Non-Financial

The options described in this case have been considered and assessed against a set of key outcome indicators and with consideration of the existing risk and residual risk.

OPTIONS TO MEET CURRENT STATE

1. Do nothing
2. Lease two mobile scanners
- 3a. Purchase two replacement MRI scanners
- 3b. Commercial Operating Lease for the replacement of two MRI scanners
- 3c. Department of Health operating lease for the replacement of two MRI scanners

OPTION TO MEET FUTURE STATE

- 4 Purchase a MRI scanner **in addition** to the two replacement scanners discussed in option 3.

The result of this assessment is shown below:

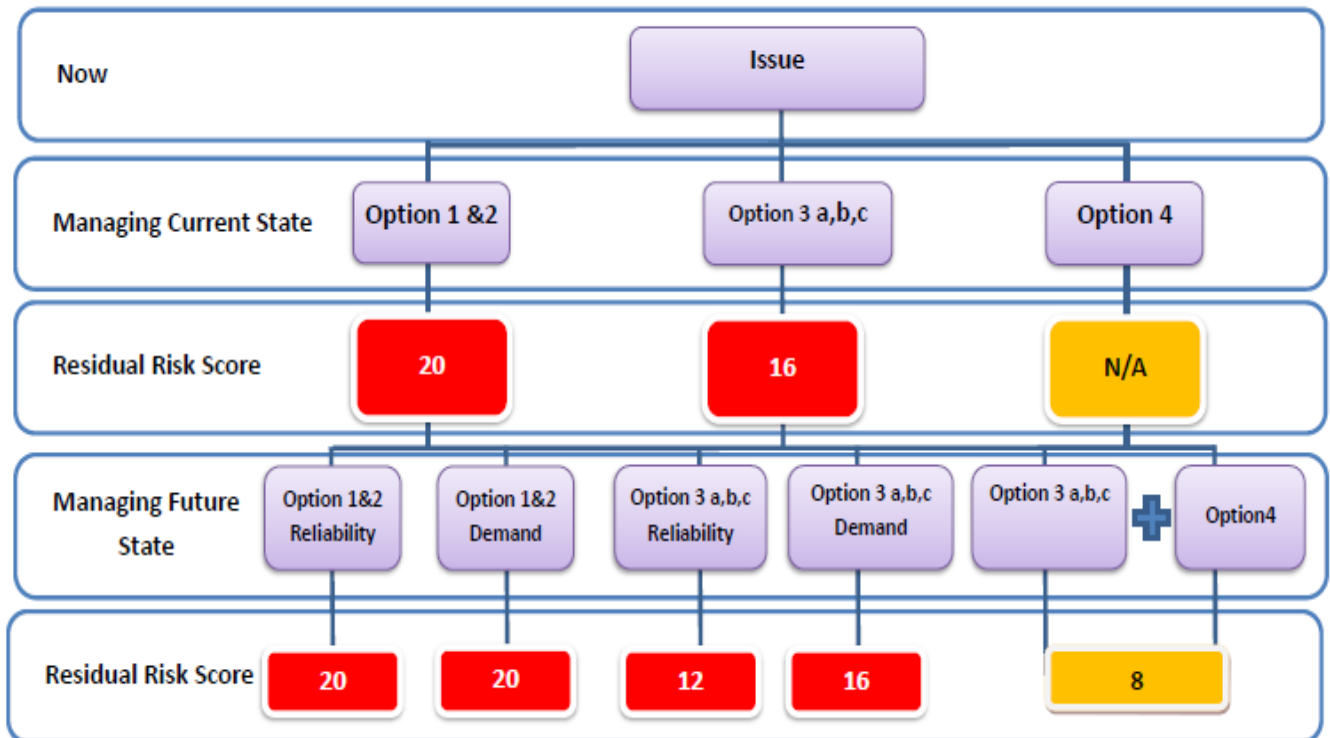
12.1 Key Outcome Indicators

Desired Outcome	Outcome Achieved Y / N		
	Option 1	Option 2	Option 3
Quality and Safety (examples)			
Reduce or eliminate existing risks (see below)	N	Reduces not eliminates	Y
Ensure compliance with regulatory quality standards	N	Y	Y
Improve quality and clinical outcomes	N	Y	Y
Improve patient experience	N	Partially	Y
Long term sustainability of clinical services	N	N	Y
Healthcare Standards (examples)			
Support the delivery of key healthcare targets	N	Partially	Y
Community and Partnership (examples)			
Alignment with the wider Clinical Services Strategy	N	Y	Y
Alignment with local commissioning intentions	N	Y	Y
Support the Sustainable Development Plan	N	Partially	Y
People and Innovation (examples)			
Alignment with the Trust's 5 Year Workforce Plan	N	Y	Y
Improve staff health and well-being, recruitment and retention	N	Y	Y
Financial Strength: Future Sustainability (examples)			
Ensure long term viability of services including future development	N	Partially	Y
Improve efficiency / deliver savings	N	N	Y
Increase contribution for future investment	N	Y	Y
Funded through existing resources or agreed external funding	N	Reduces not eliminates	Y
Number of outcomes achieved	0	9.0	15

8. Residual Risks

8.1 Residual Risk Analysis

The residual risk score for consequence for each of the current state options remains as a 4. Each of the options has a different effect on the residual risk score for likelihood. These are summarised below.



CURRENT STATE

Option 1: Residual Risk Score: 20

As this option is to do nothing it has no effect on the likelihood score, so the risk score remains at 20.

Option 2: Residual Risk Score: 20

This option is to continue using the Trusts current MRI scanners on the basis that when they breakdown, mobile MRI units will be hired in to run the MRI service. This decision would maintain a residual risk score of 20 as it will not address the issue of reliability and service vulnerability and because of the inherent disruption, a breakdown would cause. Mobile MRI scanners will not be able to accommodate the same amount of patient throughput as the Trusts static scanners. The Trust will also hold the risk of not having an MRI service at one or both of the hospital sites if a mobile scanner is not available at the time of request. This could potentially take up to 3 months and the lead-time a new scanner install is 6 months.

Option 3a, b or c: Residual Risk Score: 16

Although these options would significantly reduce the risks attributed to reliability (risk score 12), the lack of additional capacity would prevent MRI examinations being repatriated and service expansion with a loss of income to the Trust and potential failure of key performance targets

FUTURE STATE (in addition to option 3a, b, or c)

Option 4: Residual Risk Score: 8

This option with option 3a, b or c would reduce the likelihood to a score of 2, reducing the overall risk score to 8. This option addresses both the current capacity provided the ability to repatriate SaTH patient and provide additional capacity to meeting the predicted increase in activity describe by NHSE.

9. Stakeholder Engagements

9.1 Key stakeholders who have been involved in developing the case

- SaTH clinicians – Upper GI, Paediatrician, Cardiologist, Breast Surgeon, MSK
- Consultant Radiologists
- Radiology Staff
- Community Trust
- CCG
- Sustainable Services Project team

9.2 Key stakeholders who will be affected by the proposed change

- Multiple service beneficiaries
- No adversely affected stakeholder

10. Workforce Planning

10.1 Recruitment

Options 1 and 2a, b and c do not change to the current workforce provision.

New technology (Option 2) will aid in the recruitment and retention of Radiographers and Radiologists.

10.2 Training and Education

No additional training resources will be required. All applications training will be provided by the manufacturer as part of a purchase package.

10.3 Workforce Planning (Option 4)

An additional scanner would require an investment in workforce. In a desired orientation e.g. back to back with one control room, the additional MRI scanner could be run, Monday to Friday 08:00 to 20:00 with an additional 2 WTE band 6 Radiographers. This would give the option to expand the service further into the weekends if additional capacity required.

Application training is provided as part of the support package by the manufacturers. Staff will have to attend a cardiac training course to enable them to plan the service requirements. Further training for Radiologists will be required for the cardiac reporting. Funds have been identified from research, development, and educational training budgets.

11 Post Implementation Review

11.1 Key Performance Indicators

The achieving of the following KPIs will be used to assess the success of the proposal:

- A reduction in 6 week diagnostic waits

- Cancer targets
- 18 RTT
- 2 week referrals
- The repatriation of tertiary referrals to SaTH
- Patient satisfaction survey and outcomes from the patients' feedback forms
- Staff satisfaction surveys

11.2 Process and framework

The project will be reviewed by Radiology no later than a 3-month period after installation and a full report will be presented to the Capital Planning Group and Sustainability Committee

11. Appendices

Appendix 1 – Risk Assessments for Current and Future State

Appendix 2 - SWOT analysis of all options

Appendix 3- Further Finance Breakdown

Appendix 4 – Consultant Comments in support of the additional scanner

Appendix 1

Current State - Risks Assessment

1) Risk	Cause and Effect	3) Risk Mitigation	4) Likelihood after mitigation	5) Consequence after mitigation	6) Mitigating Score
Unreliability of the MRI scanners will have a direct impact on Patient Care and the Trust meetings its national targets	<p>The breakdowns and subsequent downtime negatively affects patient in-patient length of stay and key outpatient performance targets where care management is dependent upon MRI imaging.</p> <p>The technological status of the MRI scanners is having a direct impact on the recruitment and retention of staff.</p>	<p>Regular QA, medical physics assessments and servicing will monitor any variance.</p> <p>Maintain a good relationship and understanding with the maintenance providers.</p> <p>Pro-active management of appointment slots when responding to systems downtime and loss of capacity.</p> <p>All urgent and emergency scanning would be transferred to the opposite site. In-patients requiring MRI imaging would need to be ambulance transported to the opposite site.</p> <p>The use of mobile scanners will be used to address the loss of capacity, if availability is assured.</p>	5 - likely	4-major	20

Future State – Risk Assessment

1) Risk	Cause and Effect	3) Risk Mitigation	4) Likelihood after mitigation	5) Consequence after mitigation	6) Mitigating Score
Unreliability of the MRI scanners will have a direct impact on Patient Care and the Trust meetings its	<p>The breakdowns and subsequent downtime negatively affects patient in-patient length of stay and key outpatient performance</p>	<p>Regular QA, medical physics assessments and servicing will monitor any variance.</p> <p>Maintain a good relationship and understanding with the maintenance providers.</p>	5 - likely	4-major	20

national targets	<p>targets where care management is dependent upon MRI imaging.</p> <p>The technological status of the MRI scanners is having a direct impact on the recruitment and retention of staff.</p>	<p>Pro-active management of appointment slots when responding to systems downtime and loss of capacity.</p> <p>All urgent and emergency scanning would be transferred to the opposite site. In-patients requiring MRI imaging would need to be ambulance transported to the opposite site.</p> <p>The use of mobile scanners will be used to address the loss of capacity, if availability is assured.</p>			
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Appendix 2

Swot Analysis of all Options

Option 1: Do Nothing

Strengths	<ul style="list-style-type: none"> Initially, option 1 presents as a low cost options in the short term
Weaknesses	<ul style="list-style-type: none"> Capital pressure on the Trust Unreliable service for patients and Clinicians Poor patient experience Negative impact on pathways There will be no potential increase in income into the Trust due to the unreliable service and age of the equipment (a private insurance company has already stopped referring their patients to RSH) There will be a lack of technology and lack of capacity. The Trust will fail National targets, such as A&E, cancer, 18 week and the 6-week diagnostic waits due to the unreliability of the scanner causing lists to be cancelled. The Trust has been served best endeavour notices for the maintenance of the two MRI scanners. Scanner fault logs are

	<ul style="list-style-type: none"> maintained to identify the faults The cost of the maintenance contracts for the present two scanners is 150% greater than for the new scanners.
Opportunities	<ul style="list-style-type: none"> None
Threats	<ul style="list-style-type: none"> Failure to meet acute and urgent requirements Unable to undertake new services Unable to undertake service developments Failure to meet targets The loss of Radiologists and Radiographers Potential lack of MRI service if mobile unit is unavailable after breakdown

Option 2 lease two mobile scanners

Strengths	<ul style="list-style-type: none"> Could present as a low cost option in the short term Some limited mitigation to maintain service in the event of full mechanical breakdown
Weaknesses	<ul style="list-style-type: none"> Financial cost of mobile units is very high (>£2000 per day) Loss of income due to lower levels of patient throughput on a mobile MRI scanner Service disruption due to loss of throughput Reduction in patient care inherent from scanning on the hospital car park Does not demonstrate sustainability Loss of capacity due to reduction in throughput on mobile scanner and recurrent breakdowns on current scanners. Does not address current capacity shortfall and increasing demand It would take 6 months to restore normal service after a decision was made to install a new scanner Not able to repatriate SaTH patients
Opportunities	<ul style="list-style-type: none"> Potentially, the current MRI scanners could maintain service for longer than expected
Threats	<ul style="list-style-type: none"> Inability to perform some studies in a mobile scanner with loss of certain services at one or both hospital sites e.g pump contrast Loss of reputation Potential breach of Trusts key targets such as 18 week RTT, 2-week cancer and 6 week diagnostic. Potential fines for breach of targets Possibility of no mobile unit being available at time of request (recent investigations highlighted a 6 month lead time) Pad and services hook-ups may not be available if a semi-permanent demountable such as Vanguard or mobile ward is on site at the time of breakdown. Loss of Radiographers and Radiologists

Option 3 a, b and c – the replacement of the two MRI scanners, providing a like for like service

Strengths	<ul style="list-style-type: none"> • New scanners provide an improved service for patients utilising new technology. • Their design will enhance the Radiographer experience of using the system, which includes lighter coils for them to lift on and off the unit reducing the potential MSK injuries. • Improved confidence in the diagnosis of pathology due to the improved imaging quality • It allows Radiology to support some of the Trust's strategies. • It increases the ability to recruit all grades of staff. • New technology means that the scanner is wider and less imposing. They are also quieter and therefore is more acceptable to claustrophobic patients • They have advanced facilities to suppress motion artefacts and aid scanning of paediatric patients without the need for sedation • The scanners would be reliable and offer sustainability for the future of the service • Significant reductions of risk to the Trust in terms of continuity of services • Gained efficiencies from reduction of downtime
Weaknesses	<ul style="list-style-type: none"> • No continuity of service during enabling work as the present MRI scanner will have to be removed from site prior to the replacement scanner being installed. • To maintain the service all patients including A&E, inpatients and outpatients will have to be scanned in a mobile MRI scanner sited in the patient car park by the Outpatients entrance. This will cost approximately £362,000, for each upgrade, for the duration of the project. All patients will have to go outside 24/7 to have their scan. • The replacement of the MRI scanners does not address the capacity shortfall identified during the demand and capacity exercise undertaken with the Intensive Support Team on the back of the Cancer Review exercise. • Not all scans undertaken on the static site can be undertaken on the mobile unit during the new work.
Opportunities	<ul style="list-style-type: none"> • Able to undertake GA procedures on paediatrics • Identical MRI scanners across the Trust will lead to standardisation of working practices and protocols. • Opportunity to reconfigure services • Potentially the new MRI scanner will be able to support service development and the repatriation of tertiary referrals but the limiting factor is the lack of capacity. • There will be an improvement in the recruitment and retention of staff due to new technological equipment. • The MRI scanners have a larger weight capacity, larger diameter bore. This will enable the repatriation of some of the bariatric patients back into SaTH. It will also decrease the number of patients we have to decline to undertake a MRI scan because of patient habitus.

	<ul style="list-style-type: none"> The new technology is not workstation based so it provides a much more flexible working environment for Radiologists as these images can be seen on their PCs in both RSH and PRH.
Threats	<ul style="list-style-type: none"> Unable to expand the service due to the inability to respond to changes in service demands due to lack of capacity. Failure to capture additional work on the periphery, reducing the ability to increase income to offset the capital costs of the MRI scanners. The Cardiac MRI service cannot be repatriated from UHNS and UHB into SATH. The NICE guidelines for Chronic Chest Pain Pathway and other cardiac pathways will not be able to be implemented due to the lack of capacity and functionality of this scanner. National directives such as the commissioning of Direct Access for GPs for suspected cancer patients will not be able to be undertaken due to lack of capacity. There is a potential for this service to be commissioned out of county.

Option 4 – The purchase of a third MRI Scanner in addition to the two replacement scanners

Strengths	<ul style="list-style-type: none"> Provide the ability to maintain service continuity when the other MRI scanner has downtime due to a service or breakdown. This will also eliminate some of the need to transfer patients cross-site. The MRI service will be maintained throughout the enabling project with two MRI scanners at the one site. On the site where two scanners are being provided there will be the ability to provide the capability to segregate acute sector patients from the elective sector patients. This will improve patient dignity within the Radiology Department. On the site where two scanners are being provided the ability to have an MRI scanner dedicated to acute patients, emergency referrals and inpatients. This will improve the response time from the receipt of a request to a scan, leading to an improved patient experience and pathway. This project would meet the Trust's strategic plans to increase productivity with technology, address existing capacity shortfalls, and meet national healthcare targets. It would also address the issue of 18 months' worth of activity being scanned in 12 months with the present scanner. Improves patient flow and experience. Enable service developments and increase income into the Trust in areas such as Cardiology, Urology and Oncology. The availability of new MRI technology on the new scanners will improve the opportunity to recruit and retain Radiographic staff. Improved access for patients More attractive for patient choice of where to attend for scan An additional static third scanner requires fewer staff,
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	especially if two scanners are side by side than and additional mobile scanner.
Weaknesses	<ul style="list-style-type: none"> • The need to increase the income to offset the cost of an additional scanner • Reliant on CCG to fund the additional workload • There will be financial implication for the Trust due to the high capital outlay as they need to fund the enabling works
Opportunities	<ul style="list-style-type: none"> • Ability to expand the service to undertake cardiac MRI scans; MRI Enterography, MRI breast, pre prostate biopsy scans, T&W MSK referrals • Approach the private insurance companies to reconsider their decision not to allow their patients to be scanned at RSH due to the age of the present equipment. • Provides the ability to a flexible approach to changes in service demand due to National Health Promotion Advertising Schemes, such as 'blood in your urine'. • The new technology is not workstation based so it provides a much more flexible working environment for Radiologists as these images can be seen on their PCs in both RSH and PRH. • The MRI scanners have a larger weight capacity and larger diameter bore than the present scanner. This will enable the repatriation of some of the bariatric patients back into SaTH; it will also decrease the number of patients we have to decline to undertake a MRI scan because of patient habitus. Claustrophobic patients are more likely to tolerate the scan so they are not sent out of County. We could also offer these services to other Trusts whose equipment will be below the specification of the new MRI scanners. • From experience, this will assist with the recruitment and retention of staff.
Threats	<ul style="list-style-type: none"> • Third parties may undertake the work in the community setting.

Appendix 3

Additional Financial Information

OPTION 1 - DO NOTHING

The Shrewsbury and Telford Hospital NHS Trust								
Support Service Care Group								
MRI Scanner Business Case								
Option 1	Do nothing							
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
	£000	£000	£000	£000	£000	£000	£000	£000
Capital Cost								
Cost of scanners	0	0	0	0	0	0	0	0
Enabling Work	0	0	0	0	0	0	0	0
Mobile rental for enabling works	0	0	0	0	0	0	0	0
Charitable fund contribution	0	0	0	0	0	0	0	0
Total Capital Cost	0	0	0	0	0	0	0	0
Revenue Consequences								
Revenue cost of static units								0
Maintenance contract								0
Capital charges								0
Less financial savings/income								0
Existing maintenance contracts								0
Existing capital charges								0
Increased income opportunities								0
Loss of income due to downtime	(96)	(192)	(288)	(385)	(481)	(577)	(673)	(2,692)
Cost of delivering additional activity								0
Net income and expenditure effect Gain/(Loss)	(96)	(192)	(288)	(385)	(481)	(577)	(673)	(2,692)

OPTION 2 – LEASE TWO MOBILE MRI SCANNERS

The Shrewsbury and Telford Hospital NHS Trust								
Support Service Care Group								
MRI Scanner Business Case								
Option 2	Lease of 2 Mobile MRI Scanners							
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
	£000	£000	£000	£000	£000	£000	£000	£000
Capital Cost								
Cost of scanners	0	0	0	0	0	0	0	0
Enabling Work	0	0	0	0	0	0	0	0
Mobile rental for enabling works	0	0	0	0	0	0	0	0
Charitable fund contribution	0	0	0	0	0	0	0	0
Total Capital Cost	0	0	0	0	0	0	0	0
Revenue Consequences								
Revenue cost of static units	(1,536)	(1,536)	(1,536)	(1,536)	(1,536)	(1,536)	(1,536)	(10,751)
Maintenance contract								0
Capital charges								0
								0
Less financial savings/income								
Existing maintenance contracts	172	174	176	176	176	176	176	1,225
Existing capital charges	118	114	111	111	111	111	111	787
Increased income opportunities	0	0	0	0	0	0	0	0
Loss of income due to reduced capabilities	(1,143)	(1,143)	(1,143)	(1,143)	(1,143)	(1,143)	(1,143)	(8,001)
Cost of delivering additional activity	0	0	0	0	0	0	0	0
Net income and expenditure effect Gain/(Loss)	(2,389)	(2,391)	(2,392)	(2,392)	(2,392)	(2,392)	(2,392)	(16,740)

OPTION 3A – CAPITAL PURCHASE OF TWO REPLACEMENT MRI SCANNERS

The Shrewsbury and Telford Hospital NHS Trust								
Support Service Care Group								
MRI Scanner Business Case								
Option 3A	Purchase two replacement MRI scanners							
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
	£000	£000	£000	£000	£000	£000	£000	£000
Capital Cost								
Cost of scanners	(1,745)							(1,745)
Enabling Work	(600)							(600)
Mobile rental for enabling works	(726)							(726)
Charitable fund contribution								0
Total Capital Cost	(3,071)	0	0	0	0	0	0	(3,071)
Revenue Consequences								
Revenue cost of static units	0	0	0	0	0	0	0	0
Maintenance contract	0	(160)	(160)	(160)	(160)	(160)	(160)	(958)
Capital charges	(351)	(343)	(333)	(323)	(314)	(304)	(294)	(2,262)
								0
Less financial savings/income								0
Existing maintenance contracts	172	174	176	176	176	176	176	1,225
Existing capital charges	118	114	111	111	111	111	111	787
Increased income opportunities	0	0	0	0	0	0	0	0
Cost of delivering additional activity	0	0	0	0	0	0	0	0
Net income and expenditure effect Gain/(Loss)	(61)	(215)	(206)	(196)	(187)	(177)	(167)	(1,207)

OPTION 3B – OPERATING LEASE FOR THE REPLACEMENT OF TWO MRI SCANNERS

The Shrewsbury and Telford Hospital NHS Trust								
Support Service Care Group								
MRI Scanner Business Case								
Option 3B	Operating lease for the replacement of two MRI scanners							
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
	£000	£000	£000	£000	£000	£000	£000	£000
Capital Cost								
Cost of scanners	0							0
Enabling Work	(600)							(600)
Mobile rental for enabling works	(726)							(726)
Charitable fund contribution	0							0
Total Capital Cost	(1,326)	0	0	0	0	0	0	(1,326)
Revenue Consequences								
Revenue cost of static units	0	0	0	0	0	0	0	0
Maintenance contract	0	(157)	(157)	(157)	(157)	(157)	(157)	(942)
Operating Lease	(242)	(242)	(242)	(242)	(242)	(242)	(242)	(1,695)
Operating lease arrangement fee	(1)							
Capital charges	(45)	(44)	(43)	(42)	(41)	(40)	(40)	(295)
Less financial savings/income								
Existing maintenance contracts	172	174	176	176	176	176	176	1,225
Existing capital charges	118	114	111	111	111	111	111	787
Increased income opportunities	0	0	0	0	0	0	0	0
Cost of delivering additional activity	0	0	0	0	0	0	0	0
Net income and expenditure effect Gain/(Loss)	2	(155)	(155)	(154)	(153)	(152)	(152)	(920)

OPTION 3C- DoH OPERATING LEASE FOR THE REPLACEMENT OF TWO MRI SCANNERS

The Shrewsbury and Telford Hospital NHS Trust								
Support Service Care Group								
MRI Scanner Business Case								
Option 3C	Department of Health operating lease for the replacement of two MRI scanners							
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
	£000	£000	£000	£000	£000	£000	£000	£000
Capital Cost								
Cost of scanners	0							0
Enabling Work	(600)							(600)
Mobile rental for enabling works	(726)							(726)
Charitable fund contribution	0							0
Total Capital Cost	(1,326)	0	0	0	0	0	0	(1,326)
Revenue Consequences								
Revenue cost of static units	0	0	0	0	0	0	0	0
Maintenance contract	(123)	(123)	(123)	(123)	(123)	(123)	(123)	(862)
Operating lease	(216)	(216)	(216)	(216)	(216)	(216)	(216)	(1,513)
Operating lease arrangement fee	(1)							
Capital charges	(45)	(44)	(43)	(42)	(41)	(40)	(40)	(295)
								0
Less financial savings/income								0
Existing maintenance contracts	172	174	176	176	176	176	176	1,225
Existing capital charges	118	114	111	111	111	111	111	787
Increased income opportunities	0	0	0	0	0	0	0	0
Cost of delivering additional activity	0	0	0	0	0	0	0	0
Net income and expenditure effect Gain/(Loss)	(95)	(95)	(95)	(94)	(93)	(92)	(92)	(658)

OPTION 4 – PURCHASE OF AN ADDITIONAL MRI SCANNER

The Shrewsbury and Telford Hospital NHS Trust								
Support Service Care Group								
MRI Scanner Business Case								
Option 4	Purchase an additional MRI scanner							
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
	£000	£000	£000	£000	£000	£000	£000	£000
Capital Cost								
Cost of scanners	(780)							(780)
Enabling Work	(540)							(540)
Mobile rental for enabling works	0							0
Charitable fund contribution	780							780
Total Capital Cost	(540)	0	0	0	0	0	0	(540)
Revenue Consequences								
Revenue cost of static units	0	0	0	0	0	0	0	0
Maintenance contract	0	(80)	(80)	(80)	(80)	(80)	(80)	(479)
Capital charges	(40)	(39)	(39)	(38)	(37)	(36)	(36)	(265)
								0
Less financial savings/income								0
Existing maintenance contracts	0	0	0	0	0	0	0	0
Existing capital charges	0	0	0	0	0	0	0	0
Increased income opportunities	0	0	0	0	0	0	0	0
Cost reductions - Cardiology	74	74	74	74	74	74	74	519
Cost reductions - MSK	60	60	60	60	60	60	60	420
Cost of delivering additional activity	(77)	(77)	(77)	(77)	(77)	(77)	(77)	(537)
								0
Net income and expenditure effect Gain/(Loss)	17	(61)	(61)	(60)	(59)	(58)	(58)	(342)

Appendix 4

1. CONSULTANT SUPPORT FOR THE ADDITIONAL MRI SCANNER

There is massive need for MRI in MSK.

In general surgery we need better anal fistula imaging which is not possible with our current aged MRI scanners.

We need to replace CT scanning and barium follow through with small bowel MRI to treat our young Crohn's patients better and reduce their lifetime exposure to ionising radiation.

M Cheetham, Medical Director for Scheduled Care, Consultant Colorectal Surgeon

I support this business as clinical and urology cancer lead. Rapid access to MRI has helped urology cancer and non-cancer patients in their pathways. This has been one of the reasons for urology department to turn around our poor cancer performance. We are still struggling to get pre-biopsy MRI due to capacity restraints. Other urology departments in UK have changed practice to get MRI before prostate biopsy so that diagnosis can be obtained quickly with fewer prostate biopsies. Our patients will benefit from similar service.

N Lynn, Consultant Urologist

I think we have reached a situation where it is now unacceptable to subject a child to Ionising radiation (barium) when there is a better alternative (MRE) already in use all over the country.

Naeem Ayub, Consultant Paediatrician

I have learnt this week that the QEH will no longer accept referrals from SaTH due to capacity issues.

This leaves our patients without access to MRE facilities. We are the only trust on the west midlands without access to MRE.

I realise you have just commenced a new venture but addressing and resolving this issue is now critical and we would all be grateful if it could be raised with the trust board as a critical issue.

Jeff Butterworth, Consultant Gastroenterologist