

WEST HERTFORDSHIRE HOSPITALS NHS TRUST

Cardiac CT and MRI Business Case

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Version No:8

Issue Date:

REVIEWED BY	DIVISION BOARD	IM&T	ESTATES	CLINICAL SUPPORT	OTHER	OTHER
DATE	NOV 15			NOV 15		

	AMOUNT 2015/16	2016/17	2017/18
CAPITAL FUNDING REQUESTED	£3,000,396		

SOURCE OF FUNDING	SOURCE
REVENUE	
CAPITAL	X

VERSION HISTORY

Version	Date Issued	Brief Summary of Change	Owner's Name
1	27/11/2014	Business Case	Mary Bhatti
2	12/10/2015	Updated numbers	Mary Bhatti
3-7	22/10/2015 on-going	Updated finance section and other sections	Sue Daniels
8	23/12/2015	Updated following comments at Finance and Performance Committee	Sue Daniels

Table of Contents

1. PURPOSE OF BUSINESS CASE	2
2. STRATEGIC CONTEXT	4
3. CASE FOR CHANGE	7
3.1 Business Needs.....	7
3.2 Benefits.....	8
4. AVAILABLE OPTIONS	9
5. PREFERRED OPTION	9
6. PROCUREMENT ROUTE	10
7. FUNDING, AFFORDABILITY AND FINANCIAL ANALYSIS.....	10
7.1 Capital Costs	10
7.2 Revenue Costs	11
7.3 Activity and Income	12
7.4 Profitability	12
7.5 Financial Analysis	13
7.6 Source of Funding	13
8. RISK APPRAISAL	13
8.1 Main Risks Associated with Implementing the Business Case	13
8.2 Main Risks Associated with NOT Implementing the Business Case	13
9. MANAGEMENT ARRANGEMENTS	14
APPENDIX 1 PLANS.....	14
APPENDIX 2 FINANCIAL ANALYSIS.....	13

1. Purpose of Business Case

This business case seeks approval for the capital investment of £3,000,396 including VAT.

The investment is for the establishment and provision of a Cardiac Computed Tomography (CCT) and Cardiovascular Magnetic Resonance (CMR) service at Watford General hospital.

The investment includes the purchase of a new CCT and CMR scanner, installation of the scanners, the associated staff and running costs to enable the Trust to run its own in house CCT and CMR service.

This will improve the patients' experience and the care they receive on both in-patient and elective pathways.

CMR technology is at the cutting edge of cardiac diagnostics. It produces high-quality static and moving images and means more accurate diagnoses for many heart conditions, reducing the need to repeat diagnostic tests, and in some cases may mean that multiple diagnostic tests can be replaced by a single CMR scan procedure.

CCT is a painless test that uses an x-ray machine to take clear, detailed pictures of the heart. During the scan the machine will take a picture of each part of the heart with a computer, it will then assemble the pictures together to make a three-dimensional (3D) picture of the whole heart. Commonly an iodine-based dye (contrast dye) is injected into one of the patient's veins during the scan. This dye highlights the coronary arteries on the x-ray pictures. The Cardiologists and radiologists will then use this information to form a diagnosis and treatment plan for their patients.

2. Strategic Context

2.a. CT

- The increase in cardiac CT in the UK follow on from NICE guidance CG 95. Coronary Calcium scoring and CT coronary angiography were recommended for the assessment of patients with recent onset chest pain. The recommendation was that patients with an estimated risk of coronary artery disease of between 10% and 30% should undergo CT for Coronary Calcium scoring. If the score is ≥ 0 a CT coronary angiography is indicated unless there is evidence for extensive coronary calcification (score > 400). Since this guidance was issued, there has been a clear expansion in indication, with many specialists (including our own) routinely performing CT angiography if the calcium score is zero, and up to a calcium score of about 1000. Many higher risk patients who are not suitable for invasive coronary angiography are also being referred.
- According to the Cardiac Network Survey results for rapid access chest pain clinics, cardiac diagnostics and a national network survey, show that about 15% of all patients who attend a rapid access chest pain clinic fall in the low risk category for which CaScoring/CT angiography would be indicated by the current NICE guidelines. For the Bedfordshire & Hertfordshire Heart and Stroke Network the percentage was slightly higher at 20%. In WHHT from Jan'14-Dec'14 858 pts were seen in RACPC =172 CT's annually if the NICE guidelines were applied. However, as above, many specialists are using CT outside this guidance, reflected in local numbers of referrals for CT being much higher than this.

- In the last rolling year to date West Herts cardiologists and radiologists have performed 649 cardiac CTs on the NHS contract at Spire Bushey hospital. [data from spreadsheet at Spire Bushey]. The locally agreed price is £750. This is paid for by the CCG via the Trust. This gives a total cost of £486,750 for CT for the year which is lost income for the Trust.
- Although 649 CTs were performed, there is a considerable (> 10 weeks) waiting time, and the numbers of scans are determined solely by the number of slots at Spire Bushey. In a month where all lists happen (no public holidays etc), 45 scans happen a month. This gives a total of 540 outpatient CTs a year. Of note there has been a steady increase in referral since the service was established so this is expected to grow considerably, particularly when the service moves onsite.
- As well as outpatient elective work (and lost income from this service being contracted out), a new CT scanner on site will reduce acute bed occupancy, reduce length of stay improve patient flow from level 1 to level 3, improve patient satisfaction, and free capacity in the cath lab which can then be used for elective outpatient work, increasing income further.
- An audit carried out in June 2014 has revealed that over one month 30 patients with chest pain who had not had a heart attack (so called “troponin negative” patients) were kept in hospital for invasive coronary angiography. This equates to 360 patients a year. These patients are potentially suitable for CT rather than invasive angiography. This is quicker, lower risk, and cheaper, as well as being more acceptable to patients. Our audit showed that these 30 patients had a mean inpatient wait of 2.5 days. This equates to 75 bed days for the month. However, in a winter month our *mean* inpatient wait has been as long as 5 days during the winter. This indicates that in a winter month up to 150 bed days may be taken up with troponin negative patients awaiting angiography. Given that we have 24 beds, this means that 20% of our beds can be taken up with troponin negative patients awaiting angiography – who could potentially have CT.
- Our audit also showed that only 4 of these 30 patients went on to need coronary intervention. The other 26 were discharged after their angiography, often on the next day. Furthermore, patients allocated to CT can also be discharged same day after a normal scan (see Keenan reference attached), and no groin care is required, only an iv line, so nursing care is less detailed, and level 3 green and purple beds can be more efficiently allocated to patients with access site needs.
- The catheter lab capacity freed up by the reduced use of diagnostic invasive angiography can of course be used to reduce the very long elective (some 3 month) waiting time for EP procedure, complex devices, and elective PCI. Thus increasing income and better patient experience.

2.b. CMR

- Despite the advances in CMR over the last five years, and the fact that a CMR Scanner is now standard equipment in many tertiary care centres world-wide, there are still only a score of dedicated CMR scanners in the UK. CMR has come of age as a technology and more CMR facilities are needed nationally. CMR roll out is taking place to secondary care, and the leading secondary care / non-surgical cardiac centres now have this hardware available. Therefore as a centre with two cath labs it

is essential for us to have this technology on site. Our neighboring units (Harefield and Stevenage) both have plans well advanced to get cardiac MRI on site.

- According to BCCMR in 2010 from every million population there would be 2275 referrals for CMR. In West Herts with 700 000 we would be expected to generate 1592 CMR referrals if NICE guidelines were applied. Note this guidance is from 2010 and clear expansion has taken place since then.
- Over the last 12 months rolling year West Herts Trust has referred 467 patients to two Tertiary centers for CMR scans as per NICE guidelines. This is at a tariff of £730 per patient – a lost profit to the Trust of £340,910. The tertiary services are struggling to keep up with the demand of our patients and waiting lists are rising. It has however demonstrated that a service is both clinically necessary and financially feasible, and is an important data source for this business case.
- The trust has only recently started referring in-patients for CMR. If the guidelines were applied to all appropriate inpatients the rate of referrals is estimated to be 2 patients per week, this equates to approximately 104 patients per annum. However this is a major underestimate of the inpatient demand, as is shown by practice at centres with CMR on site. If CMR were available locally then numbers would be expected to increase significantly, to at least 5 a week. This again will free cath lab time and allow us to increase our Elective capacity thus increasing elective income.

The establishment of a CCT and CMR service would support the Trusts strategic business objectives by: Evidence presented in Section 7

- **Providing safe patient care:** A key point. Cardiac CT and MRI are both safe tests. It is much safer for patients to have coronary assessment by cardiac CT than by invasive coronary angiography. Patients will also avoid the risk of heart attack and stroke with invasive testing. Also, current figures show that nationally only 24% of patients requiring testing actually receive these tests. The Trusts own figures indicate that at least 25% of patients who did not have the scan should have.
- **Improve outcomes and quality of care:** Reduced stay. Having state of the art imaging available locally for West Herts patients so we do not have the reputational damage of having to refer out. More rapid assessment.
- **Improve the patient experience:** It is a universal experience that non-invasive testing is much more acceptable to patients who in general do not enjoy invasive testing. Patients will also avoid the risk of heart attack and stroke with invasive testing. This technology should be available on site for West Herts patients as it is at many centres locally.
- **Sustain and improve performance:** by making better decisions earlier performance will improve and RTT targets will be met. More accurate EDDs – this is because the length of a cardiac CT is predictable (10 minutes in the scanner) unlike invasive angiography which is unpredictable. Better and more efficient bed utilisation should help with more predictable bed management and reduce waiting time breaches.
- **Be financially sound:** At the moment significant income has been lost as outlined above. There are opportunities for the Trust to be able to provide a service to other Trusts and generate new income. It will shorten the patients length of stay (LOS) freeing bed days.
- **Work in active partnership:** a review of the ways the service is provided will open up opportunities for the Trust to work more collaboratively both internally and may also present opportunities for the wider health economy.

- **Attract, retain and motivate an appropriately trained workforce:** the provision of a CCT and CMR service, which is not widely available locally, would significantly improve the profile of the Trust within the local and wider health economy.

The establishment of a CCT and CMR service will also support the Trust's business objectives:

- **Sustain market share:** Currently no other Trust within the Beds and Herts Stroke Network performs CMR on site. Harefield has a mobile scanner and Stevenage is seeking to establish a service. An on site CMR scanner will therefore put us ahead of local competitors and could potentially attract referrals.
- **Reshape and rationalise services to ensure financial viability:** the establishment of the CCT and CMR services will provide the Trust with an opportunity to review the current provision of scanning services to ensure the best model of service is adopted.
- **Increase market share at the periphery:** see sustain market share above. The Trust would be in pole position to become the provider of choice for CCT and CMR Services.
- **Increase the range of specialist care provided locally:** the establishment of an in house CCT and CMR service would significantly increase the range and quality of specialist care the Trust would be able to provide to its local community.
- **In house CCT and CMR will also provide safer practice and ensure greater governance of the service that outsourcing.**

3. Case for Change

3.1 Business Needs

By providing an inhouse CCT and CMR service as suggested above this will significantly improve the Patients' experience and path way. It will also provide a service which we can have control over in order to achieve the RTT targets and provide the governance and assurance of best practice and safe care. The strategic and financial benefits have been discussed in Section 2 above and Financial Benefits will be demonstrated in section 7.

In order to deliver and accommodate this service there are a number of Business Needs.

Capacity

A new area is required to accommodate the CT and MRI scanner, along with associated plant room, control room, patient recovery areas, offices, waiting area, changing cubicles and toilets. It has been proposed and plans drawn up and work costed to convert the current Radiology MDT meeting room area, clinic preparation area and Pink Suite in PMOK.

Staffing

Radiologists

A 10 PA Consultant Radiologist post will be required to report this additional work. This increases by 2 PA's in year 5 to match growth in demand.

Cardiologists

An additional 6 PA's of a Consultant Cardiologist will be required to carry out this work. This increases by 2 PA's in year 5 to match growth in demand.

Nursing

2.00 WTE additional nurses will be required to support this service. They are needed to staff the recovery area as patients need to be cannulated; drugs administered pre procedure for some patients and monitored post procedure. These posts can be integrated with the Radiology nursing staff in order to provide annual leave and sickness cover. This will ensure the nurses have a governance and management structure in order to support them in the service being provided.

Radiography

Additional Radiographers will be required:

1.00 WTE Band 8a Radiographer to manage the overall cardiac imaging service – this Radiographer could either be expert in CT or MRI. It is envisaged that this 8a would line manage the radiographers rotating between the cardiac catheter laboratory and the new scanners.

1.00 WTE Band 7 Radiographer either CT or MRI expert – opposite skill to Band 8a

2.00 WTE Band 6 Radiographers increasing in year 5 to 4.00 WTE Band 6 Radiographers to allow for extended working

Clerical Staff

1.00 WTE Band 2 clerical officer

IT Requirements

Additional PACS storage will be required.

10 additional PC's will be required, a scanner and 2 printers.

3.2 Benefits

It is anticipated that the preferred solution will result in a more efficient, profitable and economical model of service for the Trust.

Investment in this technology and the staffing required to operate the scanners and to report on the images will benefit patients and the Trust. These benefits are detailed in section 3.2, impact of those benefits are:

Benefits for the patients of West Hertfordshire NHS Trust

- Patients currently are referred to Spire Bushey hospital for CCT and to two tertiary centres in London for CMR. Repatriation of this outsourced work will mean a favourable patient experience with specialist facilities provided locally.
- In-patients currently wait on average a couple of days for CCT and up to five days for CMR before being transferred for these diagnostic tests. Local facilities will enable patients to be scanned either the same day as referral or the following day greatly improving the patient experience.

- In the event of mechanical failure of the existing MRI scanner on the Watford site patients will be able to be scanned on the new MRI scanner which will act as a back up in this scenario ensuring patient safety is not compromised.

Benefits for West Hertfordshire NHS Trust

- Reduces length of stay and unblocks beds, a snapshot taken when the Trust was in “black” status regarding bed availability demonstrated that five patients were waiting in beds waiting to be transferred for diagnostic cardiac imaging.
- There is currently not enough routine capacity to maintain non-cardiac CT and MRI waiting lists at 6 weeks without putting on additional capacity at weekends and during evenings. Cardiac referrals will not completely fill the new scanners and there will be excess capacity for Radiology to use which will enable Radiology to decrease waiting times. This will have a positive effect on the Trust RTT (referral to treatment) position.
- It will greatly improve the flow of patients through AAU L1 and AAU L3 by reducing length of stay thus reducing potential breaches and inpatient waits for cath Lab procedures. It will free cath lab capacity which is currently used for Invasive coronary angiography and allow more Elective work to be carried out, resulting in increased income and reduced RTT.
- The increased catheter lab capacity will also allow more in patient EP and Complex Device procedures and reduce these patients length of stay again improving patient flow and lengths of stay.

Summary of benefits

- Keeps the Service Local for West Herts Patients
- Improves patient Experience and Care Pathway both Elective and Inpatients
- Improves Patients Safety
- Improves governance processes
- Supports the trusts RTT objectives and performance in diagnostic services.
- Reduces length of stay and frees bed days.
- It will greatly improve the flow of patients through AAU L1 and AAU L3 by reducing length of stay thus reducing potential breaches and inpatient waits for cath Lab procedures.
- It will free cath lab capacity which is currently used for Invasive coronary angiography and allow more Elective work (eg Devices and EP higher income procedures) to be done, resulting in increased income and reduced RTT.
- The increased cath lab capacity will also allow more in patient EP and Complex Device procedures and reduce these patients length of stay again improving patient flow and lengths of stay
- Reduces Trust loss of income
- Increases income for the Trust by providing this service to other Commissioning areas.
- Being one of the few providers of CMR will increase the Trusts reputation in the Area

4. Available Options

1. Stay same.

The disadvantages of this are:

- a. Lost income which totals £827,660 for the last year (MRI and CT). Both services are developing rapidly so this is set to increase. Leading to potential further loss of income.
- b. Inpatients are undergoing an invasive procedure (angio) which could be replaced by a safer non-invasive CT procedure.
- c. Patients are being referred out for hundreds of scans leading to poor patient experience and causing reputation damage to the Trust for not having this technology available.
- d. We are reliant on co operation with Spire Bushey Hospital who have recently cancelled many NHS contracts, and we do not want to be so dependent on third party providers for such a key service as cardiac CT.
- e. The lack of an on-site CMR service is becoming an embarrassment for a major regional centre such as West Herts which aspires to lead in cardiac work. We have many exceptional features for a secondary care unit such as two cath labs, an on site complex device and EP service, 10 consultants, two EP specialists, two imaging specialists, coordination of a regional heart failure service, and unless our complex imaging capacity (especially CMR) keeps pace with this, we run the risk that these services may be decommissioned and moved into tertiary care.

2. Hire mobile scanner

This is at best a temporary solution. Staffing is by third party agencies. Finally this is financially disadvantageous as money has to be paid to a third party organisation.

3. Buy CT only

On site CT has advantages for both our inpatient and outpatient work, but would mean that we would not have on site CMR which is essential for a centre covering 700,000 population (see above). Also we would lose the financial advantages of installing both scanners together with single building costs.

4. Buy CMR only

As for 3, but we would also lose the advantage for reducing inpatient length of stay that CT brings, and further elective work.

5. Buy both together

The preferred option as maximises use of staff in centralised area with combined control room.

5. Preferred Option

Option 5 – purchase both together

6. Procurement Route

Procurement of equipment

The purchase of the MRI/CT scanner has gone through a competitive process linked with NHS Supply Chain and our procurement advisors at West Herts Procurement. It is envisaged that the purchase of the equipment will be made in the new financial year 16/17 due to the procurement timetable, the availability of manufacturing time and the construction programme itself.

Construction programme

The Trust had already investigated a turnkey project for the creation of the new areas and had liaised with both suppliers of the equipment. On review of these costs it was felt that a baseline offer was unacceptable and this was backed up by an external review of the cost elements by a QS company. The Trust as part of its ongoing commitment and partnership with the campus agreement had the option of offering the project through the campus agreement which was previously procured through OJEU channels. We then looked at the SCAPE framework which exists for use of the NHS. Kier construction are already a member of the SCAPE procurement route and given the close proximity the Trust has moved forward with a proposal to carry out all construction works of the MRI/CT scanner and the endoscopy works under the SCAPE contract.

The SCAPE contract was set some 3 plus years ago and the rates that were set through the framework. These rates are due to finish at the end of April in 2016 and therefore by entering into a contract we can maintain these rates throughout the whole of this installation which will lead us up to September/October 2017.

The Trust has undertaken a review of the framework costs and have had a tentative view from SWEETTS (acting as quantity surveyors) as to whether or not the prices offered represent value for money. The SWEETTS report is favourable. Kier have confirmed that they believe that they can stay within the budgetary constraints for both of the projects. The Environment department are confident that this project will stay within its budgetary control limits.

7. Funding, Affordability and Financial Analysis

7.1 Capital Costs

Equipment has been evaluated by clinical staff and these scanners are considered to meet the clinical requirement. Hertfordshire procurement have been fully involved in the evaluations as have NHS Supply Chain. The equipment costs may vary slightly post award of Business as we are then in a position to be able to talk to the Suppliers regarding specific requirements.



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	Net cost	VAT	VAT recoverable 20%	VAT recoverable	Total costs
Construction	600,000	120,000	20%	24,000	696,000
Fees	100,000	20,000	100%	20,000	100,000
Incidentals	130,000	26,000	0%	0	156,000
Enabling work	140,000	28,000	20%	5,600	162,400
Contingency	5,000	1,000	0%	0	6,000
Total Building works					1,120,400
MRI	707,303	141,461	0%	0	848,764
CT	859,360	171,872	0%	0	1,031,232
Total equipment costs					1,879,996
Total capital requirements					3,000,396

7.2 Revenue Costs

Revenue costs will be £8,143,380 over the 10 year asset life. This is offset by the income generated, as shown in the table above.

Purchase of Cardiac CT / MRI scanners

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Indicative Costs	2015-16	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026
Capital Costs	-3,000,396										
Revenue Impact		319,842	290,972	307,279	325,298	281,974	263,183	302,721	341,845	380,585	816,110
Net Impact	-3,000,396	319,842	290,972	307,279	325,298	281,974	263,183	302,721	341,845	380,585	816,110

NPV	629,414
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Further calculations are in appendix 2

Assumptions:

- Positive NPV
- Does not include depreciation or capital charges within NPV

Assumptions:

- Activity costs are based on 2015/16 costs which have been incurred YTD. 790 referrals were made for CT in 2014/15 therefore 649 as year one activity is realistic as not all referrals convert into contacts.
- Assumed 10% for the first 3 years worth of activity and a 5.5% growth from year 4 onwards for both Cardiac CT and MRI. Current waits – CT cardiac 10 week wait and growing not meeting 6 week target. MRI Cardiac – 10 week wait not meeting 6 week target
- Growth in general CT and MRI direct access is based on growth which has been seen year on year. There are 1163 CT slots available and have assumed 492 will be used for general CT direct access work and other slots for in house activity to reduce turnaround times. Have not assumed any growth for general MRI.
- General CT and MRI direct access has been costed up as per unbundled PBR tariffs for 2015/16.

- Assumed staffing levels will increase in year 5 due to increased activity.
- Assumed the income delivered is the same as cost as it is a locally agreed tariff.

7.3 Activity and Income

	YR0 2015/16	YR1 2016/17	YR2 2017/18	YR3 2018/19	YR4 2019/20	YR5 2020/21	YR6 2021/22	YR7 2022/23	YR8 2023/24	YR9 2024/25	YR10 2025/26
Activity											
Cardiac MRI Activity		488	537	591	623	658	694	732	772	815	860
Cardiac CT Activity		680	748	823	868	916	966	1019	1075	1134	1197
Growth in Direct access (general CT)		103	111	120	130	140	151	163	177	191	206
Total Activity	0	1,271	1,396	1,534	1,621	1,713	1,811	1,915	2,024	2,140	2,262
Revenue cashflows											
Income											
Cardiac MRI Activity		294,505	323,956	356,351	375,951	396,628	418,442	441,457	465,737	491,352	518,377
Cardiac CT Activity		490,123	539,135	593,048	625,666	660,078	696,382	734,683	775,090	817,720	862,695
Growth in Direct access (general CT)		42,307	52,884	66,105	82,631	86,763	91,101	95,656	100,439	105,461	110,734
CCT - additional procedures carried out (1 angio and 3 pacemakers)		39,204	39,204	39,204	39,204	39,204	39,204	39,204	39,204	39,204	39,204
Total Income	0	866,139	955,178	1,054,708	1,123,452	1,182,672	1,245,129	1,310,999	1,380,470	1,453,737	1,531,009

- Activity is based on 2015/16 activity which has been sent to 4 providers year to date
- There has been an increase of 10% for Cardiac CT and MRI combined compared to last financial year where 649 CT and 466 MRIs were sent away.
- Referrals for last year for Cardiac CT were 790.
- Growth in general CT and MRI direct access is based on growth which has been seen year on year. There are 1163 CT slots available and have assumed 492 will be used for general CT direct access work and other slots for in house activity to reduce turnaround times. Have not assumed any growth for general MRI.

7.4 Profitability

The purchase of a new CT and MRI scanner will generate £1,013,519 benefit to the I&E before overheads are attributed, over the 10 year period.

Impact on I&E	1	2	3	4	5	6	7	8	9	10	Total
Income	866,139	955,178	1,054,708	1,123,452	1,182,672	1,245,129	1,310,999	1,380,470	1,453,737	1,531,009	12,103,494
Pay	-377,455	-377,455	-389,661	-419,661	-513,452	-583,260	-583,260	-583,260	-583,260	-583,260	-4,993,986
Non Pay	-157,647	-266,027	-324,361	-330,504	-334,324	-338,350	-342,593	-347,065	-351,778	-356,745	-3,149,395
Contribution to operating costs	331,037	311,697	340,686	373,287	334,897	323,519	385,146	450,144	518,699	591,004	3,960,114
Depreciation	-229,874	-229,874	-229,874	-229,874	-229,874	-229,874	-229,874	-229,874	-229,874	-229,874	-2,298,735
Dividend	-100,991	-92,945	-84,900	-76,854	-68,809	-60,763	-52,718	-44,672	-36,626	-28,581	-647,860
Cost of capital	-330,865	-322,819	-314,773	-306,728	-298,682	-290,637	-282,591	-274,546	-266,500	-258,454	-2,946,595
Net I&E	172	-11,122	25,913	66,559	36,214	32,882	102,555	175,599	252,199	332,549	1,013,519

YR2 negative I&E due to maintenance costs coming online in M4, however if another 18 procedures are carried out, this would generate a positive NPV

7.5 Financial Analysis

Purchase of Cardiac CT / MRI scanners

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Indicative Changes	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026
Activity	1,271	1,396	1,534	1,621	1,713	1,811	1,915	2,024	2,140	2,262
Income	784,628	863,091	949,400	1,001,617	1,056,706	1,114,824	1,176,140	1,240,827	1,309,073	1,381,072
Additional income generated through DA & extra activity	81,511	92,088	105,309	121,835	125,967	130,305	134,860	139,643	144,665	149,938
Less income from outsourcing	-853,426	-938,769	-1,032,646	-1,089,441	-1,149,360	-1,212,575	-1,279,267	-1,349,627	-1,423,856	-1,502,168
Net additional income	12,713	16,409	22,063	34,010	33,312	32,554	31,733	30,843	29,881	28,841
Additional Pay / Non Pay costs	-535,102	-643,481	-714,022	-750,165	-847,776	-921,610	-925,854	-930,325	-935,039	-940,006
Capital cost and depreciation	-330,865	-322,819	-314,773	-306,728	-298,682	-290,637	-282,591	-274,546	-266,500	-258,454
Less costs from outsourcing	853,426	938,769	1,032,646	1,089,441	1,149,360	1,212,575	1,279,267	1,349,627	1,423,856	1,502,168
Net Costs	-12,541	-27,532	3,850	32,548	2,903	328	70,822	144,756	222,318	303,708
Difference	172	-11,122	25,913	66,559	36,214	32,882	102,555	175,599	252,199	332,549
Total Difference	1,013,519									

7.6 Source of Funding

3m allocated in 2015/16 capital programme for this project.

8. Risk Appraisal

8.1 Main Risks Associated with Implementing the Business Case

- Successful relocation of Pink Suite and Data Clerks before January 2016 so that building works can commence.

8.2 Main Risks Associated with NOT Implementing the Business Case

- Datix Risk 3189 – Inability to scan in-patients requiring MRI at Watford General Hospital. Current score 4 x 3 = 12.

There is only one MRI scanner at Watford General Hospital. The unit is used Monday to Friday and some weekends to provide an in-patient MRI service (and some out-patients). There can be up to ten in-patients referred daily for MRI scans. This scanner could break down at any time with the result of no MRI scanner at Watford to scan in-patients. Though this risk can be mitigated by securing a mobile scanner and installing onto site there would be a significant delay of several days whilst this mobile service was sourced without robust contingency for scanning patients elsewhere.

If we do not install a second MRI scanner on the Watford site then this significant risk for the Trust will not be sufficiently mitigated and will increase in the future as MRI referrals increase.

- If we do not provide our own service there is a potential that the Commissioning Tariff will reduce and the costs at Spire will remain the same. Resulting in a loss of income and an increase in spend.
- The activity has increased by circa 10% between 2014/15 and 2015/16 which would mean a greater cost pressure to be incurred by the trust.
- Current waiting times are 10 weeks for both CMR and CCT scans which means that 6 weeks diagnostic targets are not being met.
- There is currently not enough routine capacity to maintain non-cardiac CT and MRI waiting lists at 6 weeks without putting on additional capacity at weekends and during evenings. Cardiac referrals will not completely fill the new scanners and there will be excess capacity for Radiology to use which will enable Radiology to decrease waiting times. This will have a positive effect on the Trust RTT (referral to treatment) position.

9. Management Arrangements

Sue Daniels, Radiology Services Manager will act as project manager and will be required to be a central point of contact for the project. Kevin Howell, Director of Environment will delegate to project managers within Estates to support Sue during the project. In order to maintain the service whilst the building work is in progress, lists will be re-arranged so as not to impact on the Radiology department.

Appendix 1 – Plans



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RevB_Proposed GA P

Appendix 2: NPV

Purchase of Cardiac CT / MRI scanners

	YR0	YR1	YR2	YR3	YR4	YR5	YR6	YR7	YR8	YR9	YR10
	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Activity											
Cardiac MRI Activity		488	537	591	623	658	694	732	772	815	860
Cardiac CT Activity		680	748	823	868	916	966	1019	1075	1134	1197
Growth in Direct access (general CT)		103	111	120	130	140	151	163	177	191	206
Total Activity	0	1,271	1,396	1,534	1,621	1,713	1,811	1,915	2,024	2,140	2,262
Capital cashflows											
Building capital requirement	-1,120,400										560,200
CT Capital requirement	-1,031,232										
MRI Capital requirement	-848,764										
Total Capital	-3,000,396	0	0	0	0	0	0	0	0	0	560,200
Revenue cashflows											
Income											
Cardiac MRI Activity		294,505	323,956	356,351	375,951	396,628	418,442	441,457	465,737	491,352	518,377
Cardiac CT Activity		490,123	539,135	593,048	625,666	660,078	696,382	734,683	775,090	817,720	862,695
Growth in Direct access (general CT)		42,307	52,884	66,105	82,631	86,763	91,101	95,656	100,439	105,461	110,734
CCT - additional procedures carried out (1 angio and 3 pacemakers)		39,204	39,204	39,204	39,204	39,204	39,204	39,204	39,204	39,204	39,204
Total Income	0	866,139	955,178	1,054,708	1,123,452	1,182,672	1,245,129	1,310,999	1,380,470	1,453,737	1,531,009
Pay											
Cardiologist 6pa and increase to 8 in Yr5	-60,000	-60,000	-60,000	-60,000	-80,000	-80,000	-80,000	-80,000	-80,000	-80,000	-80,000
Nurse Band 5 - 2 WTE	-77,719	-77,719	-77,719	-77,719	-77,719	-77,719	-77,719	-77,719	-77,719	-77,719	-77,719
Admin - Band 2 - 1 WTE	-22,533	-22,533	-22,533	-22,533	-22,533	-22,533	-22,533	-22,533	-22,533	-22,533	-22,533
Radiographers Band 8A - 1 WTE	-56,510	-56,510	-68,716	-68,716	-68,716	-68,716	-68,716	-68,716	-68,716	-68,716	-68,716
Radiographers Band 7 - 1 WTE	-55,879	-55,879	-55,879	-55,879	-55,879	-55,879	-55,879	-55,879	-55,879	-55,879	-55,879
Radiographers Band 6 - 2 WTE and increase in Yr5	-93,673	-93,673	-93,673	-93,673	-117,538	-187,347	-187,347	-187,347	-187,347	-187,347	-187,347
Radiologists 6 Pas increase to 12PAs	-60,000	-60,000	-60,000	-90,000	-120,000	-120,000	-120,000	-120,000	-120,000	-120,000	-120,000
Additional Porterage					-19,926	-19,926	-19,926	-19,926	-19,926	-19,926	-19,926
Cardiologist 1pa	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Savings Bank nurse Band 5 - Transport with patient	38,860	38,860	38,860	38,860	38,860	38,860	38,860	38,860	38,860	38,860	38,860
Total Pay	0	-377,455	-377,455	-389,661	-419,661	-513,452	-583,260	-583,260	-583,260	-583,260	-583,260
Non Pay											
Contrast - £25 per person	-29,205	-32,126	-35,338	-37,282	-39,332	-41,495	-43,778	-46,185	-48,726	-51,406	
Maintenance contracts	0	-102,000	-153,000	-153,000	-153,000	-153,000	-153,000	-153,000	-153,000	-153,000	-153,000
MSSE - £8 per person	-9,346	-10,280	-11,308	-11,930	-12,586	-13,279	-14,009	-14,779	-15,592	-16,450	
Drugs - £3.5 per person	-4,089	-4,498	-4,947	-5,219	-5,506	-5,809	-6,129	-6,466	-6,822	-7,197	
Facilities (assuming 300sqm)	-108,183	-108,183	-108,183	-108,183	-108,183	-108,183	-108,183	-108,183	-108,183	-108,183	-108,183
Training	-20,000	-20,000	-20,000	-20,000	-20,000	-20,000	-20,000	-20,000	-20,000	-20,000	-20,000
Non-pay cost for Direct Access CT	-8,461	-10,577	-13,221	-16,526	-17,353	-18,220	-19,131	-20,088	-21,092	-22,147	
Facilities 20% reduction due to space already occupied	21,637	21,637	21,637	21,637	21,637	21,637	21,637	21,637	21,637	21,637	21,637
Total Non Pay	0	-157,647	-266,027	-324,361	-330,504	-334,324	-338,350	-342,593	-347,065	-351,778	-356,745
Total Expenditure	0	-535,102	-643,481	-714,022	-750,165	-847,776	-921,610	-925,854	-930,325	-935,039	-940,006
Net Cashflows	0	331,037	311,697	340,686	373,287	334,897	323,519	385,146	450,144	518,699	591,004
Capital Charges - 3.5%	0	0	0	0	0	0	0	0	0	0	0
Total Cashflows including Capital	-3,000,396	331,037	311,697	340,686	373,287	334,897	323,519	385,146	450,144	518,699	1,151,204
<i>Discounted Cash flows (3.5%)</i>	<i>1.000</i>	<i>0.966</i>	<i>0.934</i>	<i>0.902</i>	<i>0.871</i>	<i>0.842</i>	<i>0.814</i>	<i>0.786</i>	<i>0.759</i>	<i>0.734</i>	<i>0.709</i>
Present Value Cash flows	-3,000,396	319,842	290,972	307,279	325,298	281,974	263,183	302,721	341,845	380,585	816,110
Net Present Value over a 5 year Period	629,414										