Invasive Cardiology Service Development

Full Business Case

Version 1.2

Business Development Planning
The Ipswich Hospital NHS Trust
Heath Road
IPSWICH
IP4 5PD

25 May 2012
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1. Executive Summary

This full business case (FBC) has been produced following approval of the outline business case (OBC) v4 by the Ipswich Hospital NHS Trust (IHT) Board on 23rd February 2011 and subsequent approval by Midlands & East cluster Strategic Health Authority (SHA) Capital Review Group on 1st March 2012.

Invasive cardiology activity is currently exceeding demand resulting in Ipswich Hospital NHS Trust (IHT) patients being treated in other centres, predominantly Papworth Hospital. Also high profile media discussions regarding the future of cardiac services at IHT have provided a platform for public consultation which resulted in Professor Boyle concluding in June, 2009 “NHS Suffolk, working with Ipswich Hospital, should explore the feasibility of developing an angioplasty service in Ipswich”.

There is evidence of strong local support from the population to develop Invasive Cardiology Services (ICS) at IHT. That support combined with a level of demand that exceeds current capacity creates a powerful impetus for change.

This FBC details IHT’s preferred solution, which is to invest £4.995m capital funds including Optimism Bias to reconfigure the existing Foxhall ward to be an Invasive Cardiology Facility (ICF) consisting of two cardiology laboratories with a 12 bed recovery ward.

In February 2012 IHT received confirmation that it has been successful in being awarded five million pounds (£5m) of new government funding for this scheme. This funding comes with a constraint that the funds must be committed by 31st March 2013.

The Capital Cost for the Preferred Option has been recalculated by Quantity Surveyors against detailed design drawings. These costs are supported by the relevant FBC forms and included in an updated Generic Economic Model (GEM). The remaining comparator costs for the other options have been reviewed but no changes have been made to the capital cost included.

The Capital Cost excluding Optimism Bias has decreased by £322.7k from the OBC, a 6.36% decrease. This decrease is due in the main to a decrease in the contingencies of £224k, and a reduction in the Construction Cost of £213.2k following the production of detailed drawings and a detailed cost plan. These savings were offset in part by increased Equipment Costs of £38.4k, a provision for decanting of services from the existing Foxhall ward area and an inflationary uplift from MIPS 480 to MIPS 487. In addition the construction costs have taken account of costs incurred with regards to achieving the BREEAM requirement.

The Revenue Cost has decreased from OBC stage by £161k, due to reductions in Staffing Costs and Trust Overheads. A small reduction in Capital Charges has also occurred as a direct result of the reduced Capital Cost associated with the Preferred Option.

Based on the base case activity forecasts as agreed with our main commissioners the financial modelling forecasts that the development starts to generate a net surplus year on year from 2013/14.
2. Project Summary

<table>
<thead>
<tr>
<th>Project Name:</th>
<th>Development of Invasive Cardiology Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Sponsor (Executive Director):</td>
<td>Andy Burroughs &amp; Stephanie Watson</td>
</tr>
<tr>
<td>Project Manager:</td>
<td>Ivan Catling</td>
</tr>
<tr>
<td>Clinical Lead:</td>
<td>Duncan McNab</td>
</tr>
<tr>
<td>Finance Manager:</td>
<td>John Hartley</td>
</tr>
<tr>
<td>Technical Development Manager:</td>
<td>Jeff Calver</td>
</tr>
</tbody>
</table>

2.1 Project Brief

To develop an Invasive Cardiology Facility (ICF) at Ipswich Hospital to enable elective Percutaneous Coronary Intervention (PCI) service to be developed and enable all cardiac catheterisation (angio) and pacemaker activity to be undertaken at Ipswich Hospital Trust (IHT).

The ICF must be appropriate to repatriate work currently being transferred to Papworth Hospital and also to accommodate the existing and future demands of the Invasive Cardiology Service (ICS).

2.2 Project Success Factors

The overall objective is to secure modern, efficient invasive cardiology services, which achieve national policy for compliance with all the latest quality standards, at a competitive and cost effective price, enabling the Trust to service its current and planned growth requirements.

As a result the key criteria for the project are:

- a) confidence in the provision of a safe, quality assured, reliable and effective invasive cardiology services in support of the Trust clinical activity;
- b) delivery flexibility of the ICS to meet present and foreseeable demand;
- c) complying with national policies;
- d) providing a long term solution for ICS;
- e) ensuring that the ICS meet the current and future growth expectations, which will achieve the required clinical compliance and capacity requirements.
- f) provision of a safe ICS to all recognised standards and requirements, which shall meet national policies and guidance;
- g) provision of a “Value for Patients” service;
- h) knowledge that there are sufficient, suitably competent, qualified staff that are fully trained and supervised.
- i) available accurate and relevant information in a timely and easily accessible manner;
- j) provision of robust operational Contingency Plans and Disaster Plans;
- k) service availability in accordance with the demands of the modern NHS and the Trust’s operating practice.

In addition the project is required to:

- i. Achieve approval of the business case by the SHA Capital Review Group;
ii. Implement excellent channels of communication and involvement of key stakeholders in the development and implementation of the project to deliver ICS;

iii. Deliver an ICF that is compliant with all relevant and current building regulations and standards, e.g. including but not exclusively:
   a. Health Building Note (HBN) 06 series of documents;
   b. Health Technical Memorandum (HTM) 01 series of documents;
   c. HTM 2050 Design Considerations
   d. Comply with Building Research Establishment Environmental Assessment Method (BREEAM) standards as applicable;
   e. Current Recommendations of the Chartered Institution of Building Services Engineers
   f. British Standards and Codes of Practice
   g. Public Health Act
   h. Health & Safety at Work Act
   i. CDM Regulations
   j. COSHH Regulations 1999
   k. The Water Supply (Water Fittings) Regulations 1999 (and subsequent amendments)
   l. Asbestos at Work Regulations and Approved Codes of Practice.
   m. Pressure Systems Safety Regulations 2000.
   n. The Electricity at Work Regulations
   o. CIBSE - TM13 Minimising the risk of Legionnaires disease 2002.
   p. HSE – The control of Legionella Bacteria in water systems. – Approved Code of Practice.

iv. Satisfy the CQC in respect of maintaining compliance of the ICS at IHT with current regulations;

v. Maintain service levels during any transition periods as a result of implementing the preferred solution;

vi. The ICF must be appropriate to repatriate work currently being transferred to Papworth Hospital and also to accommodate the existing and future expected demands of the ICS up to 2017/18 and beyond;

vii. Deliver a BCIS accredited PCI service to the agreed schedule, standard and within authorised budget.

All of the above key criteria distil into the objectives that the project will be evaluated against as detailed in section 4.1 of this FBC.

3. Strategic Context

3.1 Description of the Organisation

The Ipswich Hospital NHS Trust (IHT) is geographically located in the Suffolk county town of Ipswich, the fastest growing urban centre in East Anglia; and administratively within the boundaries of NHS Suffolk (the PCT) (soon to be replaced by East Suffolk Clinical Commissioning Group (ESCCG)), Suffolk County Council and NHS Midlands & East (the cluster SHA).

IHT is a vibrant single-site medium-sized local acute hospital, renowned for providing a high standard of specialist healthcare services to the residents of Ipswich and East Suffolk, and some specialties to Suffolk, North Essex and beyond. IHT has approximately 510 beds in general acute, maternity, paediatric and neonatal services with an annual turnover in excess £200m.
The Trust provides specialist ('secondary' or 'acute') healthcare to a core catchment population of approximately 356,000 people living in Ipswich and East Suffolk. Our more specialised services are provided to a population in excess of 500,000 within our extended catchment area covering West Suffolk, North Essex and Mid Essex. Further general information can be obtained from the Trust’s web-site http://www.ipswichhospital.net/default.asp

3.2 What is driving the change?

High profile media discussions regarding the future of cardiac services at IHT have provided a platform for public consultation which resulted in Professor Boyle concluding in June, 2009 “NHS Suffolk, working with Ipswich Hospital, should explore the feasibility of developing an angioplasty service in Ipswich”.

There is evidence of strong local support from the population to develop invasive cardiac services (ICS) at IHT. That support combined with a level of demand that exceeds current capacity creates a powerful impetus for change.

Invasive cardiology activity is currently exceeding demand resulting in IHT patients being treated in other centres, predominantly Papworth Hospital. IHT currently does not offer a PCI service, as part of this development IHT would expand its range of cardiology services to include elective PCI, this would enable a forecast of 391 patients in 2013/14 who are currently forecast to be transferred outside of the county to be treated locally at IHT from the new Invasive Cardiology Facility (ICF) when it is operational.

In addition to PCI patients IHT is also forecasting to transfer 411 (2012/13) cardiac catheterisation (angios) patients to Papworth. With larger and better equipped facilities these patients will also be treated locally.

The benefits to the patients and their families will be significant. Ranging from a reduction in transport and accommodation costs for the patient and their families, to being treated along a care pathway that was delivered at the same single site, enabling the patient and their families to build up a trusting therapeutic relationship with the whole team prior to having any diagnostic / interventional procedures performed.

Other areas of our current services are also under pressure and patients frequently wait for procedures like pacemakers or angiograms. Increasing our capacity will also greatly enhance the access for these patients, therefore reducing the waiting periods and thereby reducing the patient’s length of stay (LoS) and improving patient flow, thus increasing the opportunities to get the right patient into the right place, first time.

The average wait for pacemaker patients from ‘decision to pace’ to implantation for emergency cases is typically 5 - 7 days (Irvine, 2010). The expectation is that up to 3 days would be reduced from the average waiting period for inpatients; approximately 40% of the activity is emergency cases. Therefore between 2014/15 and 2017/18 this equates to a reduction in bed days of between 344 & 397 days per annum or the permanent reduction of one bed from 2014/15.

Developing the Invasive Cardiology Service (ICS) will make our existing cardiac service more stable in the longer term. IHT has found it extremely challenging recruiting consultant cardiologists as the perception has been that our services have not developed in line with national treatments and that our interventional resources are limited. By opening two new fully equipped cardiology laboratories IHT will be making a powerful statement about its vision for cardiology services in the longer term. This development is likely to place IHT in a more competitive position in the recruitment market and make IHT a considerably more attractive location for consultants in this field.

An additional benefit will be that succession planning will become easier as IHT becomes an attractive employment option for consultant cardiologists and consequently our level of risk...
will reduce in respect of cardiologists leaving IHT and the ability to replace. IHT’s plan B in respect of not being able to recruit consultant cardiologists is that we will continue our partnership with Papworth Hospital with regards to the sharing of medical staff between the two sites.

A fully functional Invasive Cardiology Facility (ICF) that can absorb all the local demand and still have additional capacity places IHT in a strong position. The possibility of attracting other activity such as private work or working in partnership with another provider becomes viable.

Furthermore IHT will be better equipped and positioned to become aligned with future cardiovascular service development trends nationally. An organisation that is already achieving the required standards has a greater ability to flex and develop further as the national trends change.

Having a solid foundation enables IHT to ensure that we capture and maintain our local market share (as a minimum) of cardiac activity.

### 3.3 **Fit with Trust strategies**

#### 3.3.1 Integrated Business Plan

IHT’s vision is to be the provider of choice by placing the patient at the centre of everything we do, based on principles of quality and safety, access and accountability within a continuously improving environment.

The mission of IHT is to be renowned for our commitment to excellence in the provision of healthcare.

Achievement of our vision is underpinned by three strategic objectives which are:

- To provide safe, reliable, personal and responsive emergency care, planned care, maternity and children’s care.
- To provide nationally recognised care for older people in hospital.
- To provide a number of more specialised services where they meet accreditation standards.

Developing a PCI service at IHT embodies the spirit of our strategic objectives.

IHT’s strategy is to develop our services and maintain our position in the area for providing acute and specialised services to the wider community. IHT is open to entering into formal joint ventures; however, this will only be done where the expected income is sufficient to ensure a financially sustainable service. This strategy has been a significant factor in the options considered for this business case.

#### 3.3.2 Estate Strategy

IHT operates from a single 46 acre site to the north east of Ipswich. The oldest buildings are over 100 years old and the diverse mixture of buildings in terms of design and quality reflect the time of construction.

IHT has conducted a 6 facet survey of the estate as input into the Estate strategy covering its physical condition, functional suitability, space utilisation, quality, compliance and energy performance.

IHT regularly reviews the estate footprint necessary to deliver activity levels (now and in the future) with optimal clinical pathways and management processes. IHT uses performance indicators on space efficiency, asset productivity, asset deployment, estate quality and cost of occupancy to make informed decisions on the efficiency and condition of the estate.
The review of estate and assets in association with IHT’s service strategy has informed the decision to rationalise the estate portfolio as well as a number of improvements and developments over the next 10 years. This is informed by having strong links with strategic and local planning issues.

This estate consolidation has been a significant factor in the options considered for this business case and the preferred option identified by this business case aligns with the Estate strategy and future service development plans.

3.4 Service Activity

This development is aimed at providing safe, reliable, personal and responsive care to our local health population. This service will meet defined accreditation standards.

IHT has widely communicated to our local health population our intentions to develop a planned elective angioplasty (PCI) service and this business case represents the culmination of those intentions.

3.4.1 Demand & Capacity

NHS Suffolk has been intrinsically involved in the forecasting of the activity contained in this business case. IHT has received a letter of support from our main commissioners, NHS Suffolk and East Suffolk Clinical Commissioning Group confirming their agreement to our capacity planning and activity forecasts as well as supporting this business case for development of an Invasive Cardiology Service at IHT see Appendix A.

The activity forecasts originally agreed with NHS Suffolk and the Anglia Stroke and Heart Network built on the strategic cardiac documents: Access to Cardiac Care in the UK (2009) and Cardiac Stock Take – South East (2007). By creating assumptions regarding re-vascular rate per million population a forecast activity was generated.

As the economic climate has significantly changed since that original forecast was produced NHS Suffolk has reviewed the forecast as it believes that the level of growth will be smaller than originally forecast, despite the strategic documents forecasting growth until 2015/16.

A negotiated alternative methodology has been agreed (see Appendix A for letter of agreement) which builds on the actual number of patients treated in previous years plus a growth of 5% initially and then flat growth from 2013/14 onwards. The total Suffolk forecast actual outturn position for PCI and cardiac catheterisation has been used with the assumption that 70% of that activity would be appropriate to a secondary care setting and of that activity 70% would be attributable to Ipswich Hospital.

The 70% of activity being applicable to secondary care takes into consideration that some highly complex cases will still be undertaken at other centres however the supporting evidence that 70% is the correct percentage is limited.

It is also important to note that centres undertaking less than 400 cases could risk not achieving the required minimum critical mass to be considered as having the appropriate volume of activity to achieve the expected clinical outcomes in these procedures. The guidelines (British Cardiovascular Intervention Society (BCIS)) recommend that new sites achieve at least 200 therapeutic coronary interventions in the first year increasing to at least 400 within 3 years. Assuming that 70% of the activity is suitable for a secondary care setting with the very cautious growth profile stated generates an elective PCI demand of 391 cases in 2015/16.

To ensure that PCI and cardiac catheterisation ratios remain constant both PCI and cardiac catheterisation numbers were forecast using the same methodology and growth assumptions.
3.4.2 Catchment Population Projections

IHT is located in a centre of growing population. The Office for National Statistics (ONS) projections on population growth gives the following percentage increases in population:

Table 1 - Core Catchment Population Estimates 2010 – 2030

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 4 yrs</td>
<td>24,600</td>
<td>25,500</td>
<td>26,800</td>
<td>27,300</td>
<td>27,400</td>
</tr>
<tr>
<td>5 to 19 yrs</td>
<td>76,100</td>
<td>76,700</td>
<td>79,400</td>
<td>84,400</td>
<td>87,200</td>
</tr>
<tr>
<td>20 to 64 yrs</td>
<td>251,500</td>
<td>260,300</td>
<td>271,100</td>
<td>279,300</td>
<td>284,700</td>
</tr>
<tr>
<td>65 to 79 yrs</td>
<td>61,400</td>
<td>73,800</td>
<td>81,200</td>
<td>87,900</td>
<td>93,500</td>
</tr>
<tr>
<td>80+ yrs</td>
<td>25,200</td>
<td>28,700</td>
<td>33,600</td>
<td>41,000</td>
<td>52,400</td>
</tr>
<tr>
<td>All Ages</td>
<td>438,800</td>
<td>465,000</td>
<td>492,100</td>
<td>519,900</td>
<td>545,200</td>
</tr>
</tbody>
</table>

(Source: 2008 based Sub National Population Projections, ONS. May 2010)

Table 2 - Percentage Core Catchment Population Changes 2010 – 2030

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 4 yrs</td>
<td>3.7%</td>
<td>8.9%</td>
<td>11.0%</td>
<td>11.4%</td>
</tr>
<tr>
<td>5 to 19 yrs</td>
<td>0.8%</td>
<td>4.3%</td>
<td>10.9%</td>
<td>14.6%</td>
</tr>
<tr>
<td>20 to 64 yrs</td>
<td>3.5%</td>
<td>7.8%</td>
<td>11.1%</td>
<td>13.2%</td>
</tr>
<tr>
<td>65 to 79 yrs</td>
<td>20.2%</td>
<td>32.2%</td>
<td>43.2%</td>
<td>52.3%</td>
</tr>
<tr>
<td>80+ yrs</td>
<td>13.9%</td>
<td>33.3%</td>
<td>62.7%</td>
<td>107.9%</td>
</tr>
<tr>
<td>All Ages</td>
<td>6.0%</td>
<td>12.1%</td>
<td>18.5%</td>
<td>24.2%</td>
</tr>
</tbody>
</table>

(Source: 2008 based Sub National Population Projections, ONS. May 2010)

The above data clearly shows that the population groups 65-79 yrs and 80+ yrs are projected to grow by over 30% by 2020. However, our commissioners and the Anglia Stroke and Heart Network do not expect population growth to map directly to growth in cardiology activity.

3.4.3 Capacity for the future

This business case is predicated on conservative growth forecasts and therefore the capacity forecasts in this section will be treated as the base case for this business case.

NHS Suffolk, NHS Midlands and East Specialised Commissioning Group and IHT will work together to develop clear care pathways and intervention criteria, to ensure that activity levels remain at projected levels, in line with joint analysis of cardiac care forecasts.

Cardiac Catheterisation

Table 3 shows the volume of cardiac catheterisations (angios) that is currently being undertaken at IHT plus the volume of patients transferred and forecast to transfer to Papworth hospital due to lack of capacity up to 2017/18.

Table 3 – Cardiac Catheterisation Activity Forecast

<table>
<thead>
<tr>
<th>Cardiac Catheterisation</th>
<th>Actual</th>
<th>Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Activity</td>
<td>1037</td>
<td>1148</td>
</tr>
<tr>
<td>Ipswich work old Facility</td>
<td>658</td>
<td>813</td>
</tr>
<tr>
<td>Ipswich Work New Facility</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Work going to Papworth</td>
<td>379</td>
<td>335</td>
</tr>
</tbody>
</table>

*This assumes the new cardiac facility is operational from beginning of July 2013.
IHT’s current cardiac catheterisation capacity is fixed at around 630 procedures per year for standalone catheterisations; therefore if activity in this field grows as forecast the number of patients being transferred to Papworth could reach 463 by 2013/14 if this new facility is not built. In 2011/12 IHT made some short-term operational changes to increase capacity to treat some of the patients that would previously been scheduled to go to Papworth. These operational changes entailed longer sessions, additional resources delivering the activity and deferment of staff annual leave to maximise income for IHT in 2011/12. These operational changes are not sustainable in the long-term and do not negate the need for this development.

The forecast activity would create an approximate cardiac catheterisation / elective PCI ratio of around 2.79 cardiac catheterisations to every elective PCI. The ratio is slightly higher than the expected 2:1 ratio however this is understood to arise from the difference in activity reported at procedure code than that reported at HRG level. To achieve a consistent ratio the same growth profiles have been applied to both PCI and cardiac catheterisation.

Our consultant cardiologists have reviewed the activity stated above and have confidence that these are a prudent assessment of activity. Appendix C contains a letter of support for this service development from IHT cardiologists.

**Elective PCI**

IHT does not currently provide an elective PCI service and therefore all our current activity is transferred, predominantly to Papworth Hospital. The objective is to repatriate approximately 70% of that activity to IHT; the remaining activity would represent PPCI or other more highly complex cases. Papworth Hospital is supportive of this development and has been involved in the discussion stages of this business case; see Appendix B for letter of support.

Table 4 sets out per year the forecast level of activity that can be repatriated to IHT from Papworth Hospital.

<table>
<thead>
<tr>
<th>Table 4 – Elective PCI Activity Forecast</th>
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<tbody>
<tr>
<td>Elective PCI</td>
</tr>
<tr>
<td>Total Activity</td>
</tr>
<tr>
<td>Ipswich work New Facility</td>
</tr>
<tr>
<td>Work going to Papworth</td>
</tr>
</tbody>
</table>

*This assumes the new cardiac facility is operational from July 2013 and BCIS accreditation achieved in September 2013 in order to commence PCI at IHT in October 2013.

Forecasting PCI activity levels has been difficult as advances in technology and changes in disease presentations are frequently occurring. However using the same methodology for catheterisations as for PCI’s Ipswich Hospital and NHS Suffolk have reached an agreed forecast position.

The previously higher activity levels had been peer reviewed by the Anglia Stroke and Heart Network and agreed to be in line with their expectation therefore the newly forecast levels stated are a reduction on the original levels and therefore is a very conservative estimate of activity taking into account the current financial limitations.

**Pacemaker**

Our pacemaker activity is currently not routinely being transferred to other centres and therefore only the growth element represents a potential new income. However this activity would need to be accommodated in the new laboratories and therefore requires factoring into the assessment of capacity required.
Table 5 – Pacemaker Activity Forecast

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<thead>
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<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Activity</td>
<td>261</td>
<td>327</td>
<td>300</td>
<td>315</td>
<td>331</td>
<td>331</td>
<td>331</td>
<td>331</td>
<td>331</td>
</tr>
<tr>
<td>Ipswich work Old Facility</td>
<td>261</td>
<td>327</td>
<td>300</td>
<td>315</td>
<td>83</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ipswich Work New Facility</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>248</td>
<td>331</td>
<td>331</td>
<td>331</td>
<td>331</td>
</tr>
</tbody>
</table>

*This assumes the new cardiac facility is operational from beginning of July 2013.

Pacemaker activity has been modelled with the same prudent 5% growth rate per annum with zero growth after 2013/14. Our actual growth has been inconsistent and fluctuating across a broad range (1.65 to 22.4%). As pacemaker activity does not represent new revenue the activity growth impact is mainly used to establish lab usage, therefore the inconsistent growth of previous years does not represent a significant risk to the validity of the financial forecasting.

As shown in the above table, Pacemaker activity for 2011/12 was forecast to be 300, whereas actual activity delivered by IHT was 327. This over-performance was accommodated by longer sessions and outsourcing 18 cases to Cambridge Heart Clinic.

Emergency pacemaker patients currently occupy in-patient beds whilst waiting for pacemaker procedures. Improvement in access for these patients would significantly enhance their experience as a patient whilst reducing LOS and consequently easing patient flow. An improved patient flow makes it more likely to achieve right patient, right place, first time; again significantly improving the patient’s experience and quality of their care.

What capacity is required to deliver this level of activity?

Modelling has demonstrated that two additional cardiology laboratories would be adequate. This would enable all the work that is currently being undertaken in the jointly shared lab to be contained within the new ICF plus all the work currently being undertaken at Papworth Hospital to be repatriated at IHT. Moving the work currently undertaken in IHT’s shared lab would facilitate additional capacity for radiography however that revenue enabling potential has not been built into this business case but clearly represents another opportunity in the future.

The modelling assumes that the new lab’s maximum occupancy would be 85% and that all lab activity will operate at 85% efficiency. If the cardiology labs achieve a greater level of efficiency then the occupancy will correspondingly decrease if the activity remains constant.

Activity is forecast to be flat for all three procedures from 2013/14 and based on these projections then Lab 1 will operate at 85% utilisation and Lab 2 at 49% utilisation in 2014/15, first full year of operational service. The remaining potential capacity in Lab 2 provides the unit with a level of future proofing beyond the first five years; it also provides a ‘cushion’ if activity levels increase beyond the agreed forecast.

The projected utilisation has been calculated using a standard two session theatre day, working over 5 days of the week. This is based on British Cardiovascular Society median duration for types of procedures including time for patient to come in and leave and also for consultation with the patient and discussion of results.
Median duration of all types of this procedure (includes time for patient to come in to & leave or laboratory) | Number of patients or procedures per PA of 4 hours
---|---
Diagnostic cardiac catheterisation and angiography | 40mins | 4 cases (includes consultation with the patient and discussion of results is done at same time)
Percutaneous Coronary Intervention (PCI) | 80mins | 3 cases
Pacemaker implants (weighted median across procedures) | 80mins | 3 cases

Source: British Cardiovascular Society: Guidance on appropriate workload for consultant cardiologists, March 2010

For cardiac catheterisation and angiography the modelling assumes that 80% of the activity is ‘basic’ procedure and takes 40mins and that 20% of the activity will be ‘complex’ procedures and will take 80mins.

There is clearly the potential to consider a three session theatre day or move to 6-7 day working should demand dictate additional capacity requirements.

Establishing two dedicated cardiology labs will provide adequate capacity for the five year plan and still have an element of under utilisation. This can be further increased as mentioned therefore the future proofing in respect to the labs should be appropriate.

Recovery Bed / Spaces

The schedule of accommodation for this development includes the requirement to build 12 recovery beds/ spaces (for the purpose of this paper they will be referred to as beds from herein).

Modelling demonstrates that the planned activity is likely to produce a requirement of 10 beds from 2014/15 when the PCI service commences. However providing only 10 recovery beds would result in no capacity to utilise the available capacity in the second lab, therefore an additional 2 further bed spaces should be provided for future proofing beyond 2017/18.

<table>
<thead>
<tr>
<th>2013/14*</th>
<th>2014/15</th>
<th>2015/16</th>
<th>2016/17</th>
<th>2017/18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recovery Beds Required</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

*This assumes the new cardiac facility is operational from July 2013 and BCIS accreditation achieved in September 2013 in order to commence PCI at IHT in October 2013.

A number of patients using the labs will also be inpatients admitted to a ward area therefore once the patient has partially recovered they can be transferred back to the ward area for ongoing observation. This factor has not been built into the bed modelling as its likely that more procedures will over time be performed on a day case basis however this factor will in the shorter term provide additional recovery bed capacity should it be required.

An operational ‘common sense check’ calculation is that typically the consultant would aim to treat 6 patients per theatre session if operating at maximum efficiency. Therefore with both theatres working there would be a minimum requirement of 12 beds if all the patients required recovery in the unit.
Bed capacity and utilisation has been calculated on the unit being open until 20:00 hours Monday to Friday. If the unit opening times are increased or the number of working days changed then there is further potential to recover more patients in the same bed numbers. In respect to future proofing there remain opportunities to utilise the unit to a greater degree without being compromised by recovery bed capacity.

**Planned working day**

- **Labs**
  - theatre sessions per day per theatre – Monday to Friday
  - Indicative session times: 08:30 to 12:30 and 13:00 to 17:00

- **Ward / Recovery Area**
  - 07:30 – 20:00 – Monday to Friday

The ward area would admit the patients and prepare them for theatre for a 08:30 start; the ICF would be staffed until 20:00 to ensure that those patients at the end of the theatre list from the afternoon session could be fully recovered and discharged home. Effective ‘list’ scheduling will be paramount to successfully ensuring patients do not require recovery after 20:00 hours; major cases requiring longer recovery periods would need to be scheduled earlier in the day leaving the day cases and more minor cases to the afternoon, or treat inpatients who can be transferred back to the cardiology ward to complete their recovery period.

Keeping the facility open until 20:00 will minimise the likelihood of patients requiring an inpatient bed over night to complete their recovery.

**Staffing required to support the development**

The total amount of staff required to deliver the activity as forecast in tables 3, 4 & 5 is 19.27 WTE. There are already 7.62 WTE establishments providing the current pacemaker and cardiac catheterisation activity so the variance would be recruited into.

A provision has been made within the case for a supernumerary period for staff to undertake the required training and to help set-up the services in the new facility.

More detail on staffing plans are contained within Appendix I, Service Operational Plan.

### 3.4.4 Upside Case

The design of the ICF to meet the base case activity forecasts means there is spare capacity which creates opportunities to attract additional activity to IHT. A cardiologist currently working from a mobile suite at West Suffolk Hospital has indicated that they may also consider transferring their work to a new facility at IHT, and other stakeholders have repeated this possibility.

Do to the geographic location of IHT to North East Essex, we already see patients from Tendering and Babergh constituencies attending IHT for other services and there is the potential opportunity for patients from these areas to come to IHT for elective PCI too as it is closer than their current tertiary centre which is located at Basildon.

With additional capacity these tentative expressions of interest can be actively pursued and could open up new referral patterns for IHT as an additional benefit.

Based on the design capacity of the ICF, and maintaining the opening times but increasing the laboratory staffing levels to fully utilise Lab 2 activity could be increased by 20% across the three procedures comfortably. The following table is the Upside activity forecast used in the upside financial modelling.
Invasive Cardiology Service FBC – v1.2 FINAL

### Table 8 – Upside Case (20% Activity increase on Base case)

<table>
<thead>
<tr>
<th></th>
<th>2014/15</th>
<th>2015/16</th>
<th>2016/17</th>
<th>2017/18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Activity</td>
<td>2177</td>
<td>2177</td>
<td>2177</td>
<td>2177</td>
</tr>
<tr>
<td>Cardiac Catheterisation</td>
<td>1311</td>
<td>1311</td>
<td>1311</td>
<td>1311</td>
</tr>
<tr>
<td>Elective PCI</td>
<td>469</td>
<td>469</td>
<td>469</td>
<td>469</td>
</tr>
<tr>
<td>Pacemakers</td>
<td>397</td>
<td>397</td>
<td>397</td>
<td>397</td>
</tr>
</tbody>
</table>

This flat increase in activity across the three procedures could be varied as the allocated time for procedures is in multiples of 40 minutes. The key constraint is the recovery time and the number of beds required.

**Staffing required supporting the Upside**

As mentioned above in order to fully utilise Lab 2 laboratory staffing levels will need to be increased to meet the upside activity, which means recruiting an additional 7.16 WTE across all roles to staff the recovery ward Monday to Friday, 7:30 to 20:00 with both labs running two sessions per day.

**Private Patient Activity**

There is also the opportunity to utilise the spare capacity of the facility for private patient work, clearly this market is considered to be lucrative given that we are aware of one provider’s enthusiasm to gain a footing in this part of the region.

No assumptions for private activity have been built into the upside case but it would represent additional new income, and be at a greater income than tariff and thus represent a further increased profit position.

### 4. Objectives, Constraints and Benefit Criteria

#### 4.1 Objectives

The objectives of this project are based on the key criteria as set out in section 2.2 *Project Success Factors* of this FBC. The projects objectives are:

- a) For the three invasive cardiology services, zero cases will be outsourced, unless for clinical reasons, from 1st January 2014.
- b) BCIS accreditation peer review for PCI service completed by 30th September 2013.
- c) The ICS will pass our own self-assessment against all of CQC’s 16 outcomes with no minor concerns by 30th September 2013.
- d) Reduce the current average wait for pacemaker patients from ‘decision to pace’ to implantation for emergency cases from 5-7 days in 2010 to 3-4 days in Q4 2013/14.
- e) Reduce the length of stay (LoS) for invasive cardiology service patients by 10% by March 2014 and by 15% by March 2015 on 2012/13 baseline.
- f) The project will be delivered within the capital cost approved within this FBC and generate a revenue surplus as forecast in Table 15 at end of fiscal year 2013/14.
- g) The Invasive Cardiology Facility to be operationally commissioned and ready to deliver clinical services by 30th June 2013.
- h) For the three invasive cardiology services, zero procedures are cancelled as a direct consequence of the transition from current point of delivery to delivery from the new facility during period April to July 2013.
i) ICS patient experience measured in July to October 2013 score to be maintained or improved on 2012 baseline.

4.2 Constraints
As well as being objectives, the above are also constraints on this project and have dictated the options available to IHT.

Further constraints that the project has worked within are:

a) IHT implemented a Financial Recovery Plan (FRP) in September 2011 with the consequence that its capital investment programme is constrained which has to be factored into any option appraisal within this OBC.

b) IHT’s estate strategy and local planning constraints and likelihood of planning requests being approved.

c) In February 2012 IHT received confirmation that it has been successful in being awarded five million pounds of new government funding for this scheme. This funding comes with a constraint that the monies must be committed (financial accrual) by 31st March 2013.

4.2.1 BCIS Peer Review
The British Cardiovascular Intervention Society (BCIS) have published guidance relating to new PCI services which states:

- “that all PCI services should adhere to agreed technical, professional and practical standards
- all sites considering setting up a PCI service should undergo BCIS peer review prior to starting such a service”

The BCIS Peer Review guidance states;

2.2. A PCI service requires:

2.2.1. At least one dedicated cardiac catheter laboratory with high quality digital imaging, including freeze frame, zoom, road mapping, and immediate playback capability. In hospitals with only one catheter laboratory a high resolution portable fluoroscopy unit should be available to allow safe completion of a PCI procedure if the primary radiographic equipment fails.

6.5. Elective PCI:

6.5.3. As a minimum, all PCI services must provide access to the local catheter laboratory for six hours after routine working hours (9am to 5pm) and after completion of all elective PCI procedures. The laboratory should be fully operational within 60 minutes of a call. Complications more than six hours after elective PCI are infrequent but may require emergency catheter laboratory access, and continuous (24 hour, 7 days per week) access to the local catheter laboratory therefore provides optimal patient care. If uninterrupted access to the local catheter laboratory cannot be provided, arrangements for emergency transfer of a patient to another PCI service providing continuous catheter laboratory access must be agreed in writing between all relevant parties. All PCI services should develop plans for continuous (24 hour, 7 days per week) access to the local catheter laboratory.

4.3 Benefit Criteria
Following the agreement to provide additional Invasive Cardiology Services at IHT, a review of the options available was undertaken and each of the options scored against set benefit
criteria by a multi-disciplinary group, including representatives from Trust Management, Estates, Clinical Staff, Human Resources and Finance. The following specific criteria were identified:

- **Fit with IHT Strategy** - This section looked at how well the individual option fitted the overall strategy of the Trust in broad terms, but did not look at the specific location where the development was to be placed, other than if it would interfere with future developments on the site.
- **Fit with IHT Estates Strategy** - This section looked at how the development would fit with the overall Estates Strategy including such issues as reduction of Backlog Maintenance, maximising the existing Estate utilisation and the avoidance of standalone Buildings.
- **Relationship to Major Users** - This section looked at the relationship between the proposed site of the Invasive Cardiology Facility and the services with which it has close links, e.g. Radiology and Cardiology ward.
- **Efficient/Flexible Use of Resources** - This section looked at the ability to use resources flexibly both within the Invasive Cardiology Facility, but also in terms of staff being able to work across a number of different clinical areas including providing emergency cover.
- **Clinical & Staff Support** - This section looked at the level of Clinician and staff support for the various options considered.
- **Speed of Access/Service** - This section considered the accessibility of the service for residents of East Suffolk and the potential quality of the service to be provided.

Each of the sections was scored out of a maximum of 10 points, and each section was given a weighting factor of between 10 and 25 as follows:

- Relationship to Major Users (25);
- Efficient Use of Resources (20);
- Speed of Access/Service (15);
- Fit with IHT Strategy (15);
- Fit with IHT Estates Strategy (15);
- Clinical & Staff Support (10).

Thus each option could potentially achieve a total weighted score of 1000.

## 5. Formulation of Options

### 5.1 Background to the full business case

Percutaneous Coronary Intervention (PCI), also called angioplasty, is a highly complex procedure which involves the insertion of a catheter into a patient’s artery to open a blockage. Elective PCI is used to improve the patient’s quality of life and reduce symptoms of angina and other coronary artery related diseases.

IHT currently does not provide a PCI service; patients are transferred out of the county, primarily to Papworth Hospital for treatment. A significant number of patients requiring cardiac catheterisation are also transferred because of a lack of internal capacity.

Professor Boyle concluded in June 2009, “that Ipswich Hospital should explore the feasibility of developing an angioplasty service in Ipswich accepting that, in the first instance, this would concentrate on elective cases”

There has been a significant media campaign and public support for developing an Invasive Cardiology Service (ICS) locally. The local newspaper and cardiac user group are very much in favour of a local development at IHT. Papworth Hospital and the Anglia Stroke and Heart Network are also supporting this business case.
In January 2011 the IHT Board ratified the original OBC that identified the option to reconfigure the Foxhall ward as the Preferred Option with a capital investment of circa £5.1m.

In the intervening period from February 2011 to September 2011, the East of England (EoE) Strategic Health Authority (SHA) Capital Review Group approval process was instigated due to the revision in capital investment delegated limits thresholds being reduced to £3m limit.

In June 2011, IHT submitted the OBC v2 to the EoE SHA Capital Review Group for approval to invest capital funds to develop an Invasive Cardiology Service (ICS).

During the SHA Capital Review process, IHT implemented a Financial Recovery Plan (FRP) with the result that the Capital Costs of reconfiguring the existing Foxhall ward, circa £5.1m, would be difficult to accommodate within IHT’s delegated Capital funding streams at that time due to the adverse revenue variances incurred and the associated impact on cash availability, with the resultant reduced ability to fund the Planned Capital Programme.

As part of a continuous review process of options available to IHT for developing an ICS, the option to outsource the provision of the investment & development to a Third-Party appeared to be viable solution and required further evaluation.

In January 2012 the Trust Board ratified OBC v3 which articulated the decision to go out to OJEU competitive dialogue procurement tender for a managed service to invest to design, build and equip an Invasive Cardiology Facility (ICF).

On 1st February 2012 IHT was formally informed by the Head of Capital & Investment at the Midlands and East cluster SHA that the Department of Health was making available £5m capital funding from central additional funding to be utilised for developing this scheme.

Steve Clarke, Director of Finance for NHS Midlands & East, said: “NHS Midlands and East is very pleased its application for funding to the Department of Health was successful and Ipswich Hospital NHS Trust and its patients will have this fantastic new facility. Once the facility is built Suffolk patients requiring elective treatment will be able to access the service at their local trust rather than having to travel to other trusts. Emergency patients will continue to receive care at one of the three specialist PPCI centres in the region”

Dr Paul Watson, Chief Executive of NHS Suffolk said: “This is good news for future patients who need treatment to expand heart arteries. We can look forward to improved heart care at Ipswich Hospital, building on already good services offered there.”

As a result of this new funding, OBC v4 was produced, taking the Preferred Option identified in OBC v2, ‘Option 2 - reconfiguring Foxhall ward’ and to refresh the development timescales and financial modelling to align to the requirement from the DH to commit the central capital funds by 31 March 2013. OBC v4 was ratified by Trust Board on 23rd February 2012 and approved by Midlands & East cluster Strategic Health Authority (SHA) Capital Review Group on 1st March 2012.

5.2 Shortlisted Options

Demand clearly exceeds capacity and outsourcing options have been explored and utilised over the past few years, however they generate a cost implication for IHT that is neither cost effective nor viable in the longer term.

IHT investigated a number of different options for the location of Invasive Cardiology Facility. These can be distilled down into the following:

- Option 1 – Do minimum, which is to keep with existing facilities and levels of service provision continuing to divert work to other centres (Papworth Hospital) which is currently the main mitigation to manage this situation.
• Option 2 – Reconfigure existing Foxhall ward which is based within the main surgical hub of the estate with existing access to all clinical services
• Option 3 – Build a new facility on a ‘green field’ site, with the only option being a car park within the existing site boundary which would necessitate alternative provision of car parking.

6. Appraisal of Options

6.1 Physical Requirements
There have been detailed comparisons made by operational leads for Cardiology, the Estates team and their respective advisors to ensure comparability between the physical designs of each of the short listed options. The same quantity and type of equipment has been specified and costed for each scheme.

IHT has produced costs for reconfiguring the existing Foxhall ward area and building a new unit on a ‘green field’ site.

The new build option at IHT needs to be designed to work within the constraints of a car park. For example, a significant amount of additional corridor space is required for a new design that is not needed if Foxhall ward is reconfigured.

The new build scheme (Option 3) being proposed will be required to be built to a higher construction standard than the reconfiguration of a ward scheme (Option 2). The new build needs to be built to Building Research Establishment Environmental Assessment Method (BREEAM) ‘Excellent’, whereas refurbishments need to be carried out to BREEAM ‘Very Good’ standards.

The floor plan designs for the Preferred Option can be found in Appendix F.

6.2 Information Management and Technology Requirements
IT and communications cabling will be integral to the costs of any build and are included in the costs for each of the options appraised.

6.3 Operational Efficiencies
The running costs of the new facility have been based upon current costs for similar services and environments, modified where appropriate. Running up-to-date buildings and equipment will result in some efficiency.

Clinical operational processes will be designed utilising Lean methodology to ensure an efficient and effective clinical operational service is implemented in the ICF.

6.4 Appraisal Scoring
Option 2 consistently scored high compared with the other options, with the exception of the fit with IHT Strategy, where it scored 8 compared to Option 3 which scored 9. Although Option 2 provides suitable facilities for the current level of service provided, IHT ideally would wish to provide a Primary Cardiology Intervention Service, which a new build adjacent to A&E would have been the ideal location compared to the reconfiguration of Foxhall ward.

Some other explanatory notes in respect of the scores given are as follows.

Relationship to major users
Option 2 scored highest due to its close proximity to the Radiology department and its central location on the site with good internal communication links to other Cardiology facilities. Option 1 scored the lowest due to the need to maintain split site working with the inherent problems that causes.
Clinical and Staff Support

There is little support from staff to continue the current split site arrangement for the provision of the service and hence both the single site options score significantly higher. The marginal preference for Option 2 was due to staff perception that this was a better use of existing facilities and provided a more central location for the service than a new build elsewhere on the site.

Table 9 - Weighted Benefit Score Summary

<table>
<thead>
<tr>
<th>Option</th>
<th>Score</th>
<th>Weighted Score</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 1 - Do Minimum</td>
<td>33</td>
<td>560</td>
<td>3</td>
</tr>
<tr>
<td>Option 2 - Reconfigure Foxhall</td>
<td>51</td>
<td>845</td>
<td>1</td>
</tr>
<tr>
<td>Option 3 - New Build</td>
<td>45</td>
<td>735</td>
<td>2</td>
</tr>
</tbody>
</table>

The sensitivity to possible staff bias to the Benefit Scores was explored, and it was noted that even if one were to remove the Clinical & Staff Support criteria from the evaluation, the Preferred Option would remain the reconfiguration of Foxhall ward, and no change in the ranking of the options would take place.

It is clear that from a Benefit viewpoint the Preferred Option is ‘Option 2 - reconfigure the existing Foxhall ward’ to provide the Invasive Cardiology Facility (ICF).

6.5 Financial Cost Analysis

This section of the business case provides the financial analysis and the cost assumptions of the options appraised in section 5.

Details of the cost assumptions used are contained within Appendix D – Revenue Costs by Option and Appendix F – FB Forms, Drawings and Cost Plan.

6.5.1 Capital Costs

The initial Capital Costs for each option have been calculated by Quantity Surveyors against detailed outline design drawings (Appendices F) at a MIPS Index level of 480, Quarter 3 2011 for comparison purposes with the OBC Forms and then inflated to MIPS 487 in line with the expected index level at the time of construction. These costs are supported by the relevant FBC forms (Appendices E) and included in the GEM.

These capital costs are summarised in the following table.
Table 10 - Capital Costs by Option

<table>
<thead>
<tr>
<th>Option</th>
<th>1.Do Minimum £'000</th>
<th>2.Reconfigure Foxhall £'000</th>
<th>3.New Build £'000</th>
<th>4.PPP Comparator £'000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Costs Fees</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiology Equipment Contingency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimism Bias Inflation Adjustment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Including Optimism Bias</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

An Optimism Bias for each of the options has been included within the Capital Costs, and represents between 5.1% and 12% of the Capital Cost of the scheme.

In addition to the initial Capital Costs, capital expenditure provision has also been included within the GEM for life cycle costs and equipment replacement over the life of the various options.

6.5.2 Opportunity Costs

The re-use of the Foxhall ward incurs an Opportunity Cost to the Trust, due to the position of this ward within the main complex of the Hospital. The disposal of the ward is not practical and therefore the value of the ward for an alternative use is the Opportunity Cost to IHT which has been included. This has been estimated at £300,000 based on outline costs prepared in respect of re-providing a Chemotherapy Preparation facility utilising the Foxhall ward in comparison with a new build.

No Opportunity Cost has been included for the new build option as the car parking spaces used to accommodate the facility are re-provided as part of the Capital Cost and in the event of the scheme not preceding then the car parking would be retained as is by the Trust.

No Opportunity Costs have been identified in respect of the Do Minimum option although these may be significant. One of the drivers for the repatriation of invasive cardiology is to free capacity at major Cardiology Centres (e.g. Papworth) to enable increases in more complex Cardiology work to be undertaken at those centres including Primary Percutaneous Coronary Interventions (PPCI).

6.5.3 Revenue

The Revenue Costs for each option are set out in Appendix D and are summarised in the following table.
Table 11- Summary Revenue Costs by Option

<table>
<thead>
<tr>
<th>Option</th>
<th>1. Do Minimum £'000</th>
<th>2. Reconfigure Foxhall £'000</th>
<th>3. New Build £'000</th>
<th>4. PPP Comparator £'000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staffing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct Expenses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Departmental Overheads</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trust Overheads</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency Savings</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Unitary Payment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital Charges</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimism Bias</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Including Optimism Bias</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A basic Optimism Bias of 5% has been included within each of the options, which given the similarity between the various options is felt to reflect the Optimism Bias for all of the options. The one difference is with the Do Minimum option where a higher Optimism Bias has been applied to transport costs, and a lower bias to contract prices at 7% and 3% respectively.

The following key assumptions/points should be noted.

- **Activity** – the Revenue Costs are based on the projected future activity levels for invasive cardiology at the Ipswich Hospital Site as agreed between IHT, NHS Suffolk and Papworth Hospital. Normal demographic growth is anticipated, but the activity impact of such growth on all the options will be similar, and relate to the marginal cost of undertaking this work. However, the Do Minimum option is likely to incur a higher marginal cost due to the costs of transportation of patients from East Suffolk to Papworth.

- **Inflation** - the impact of inflation is assumed to be equivalent for all the options, this may benefit the Do Minimum Option as the costs of transport may increase significantly faster than general inflation.

- **PPP Comparator** – These costs are based on those proposed within a Joint Venture proposal put forward by a major provider of such facilities within the Private Sector. It should be noted that the private provider’s proposal was to reconfigure Foxhall Ward as the most cost effective solution to provide a suitable facility.

These Revenue Costs have been included within the GEM over the life of the various options.

### 6.5.4 Generic Economic Model (GEM)

The Capital and Revenue Costs of each option have been entered into the GEM after excluding VAT and then discounted at a rate of 3.5% per annum as per the Treasury guidance. The GEM is a separate file to this business case due to its 12MB size.

It can be seen that the PPP option is not significantly different in respect of being value for money when compared to the Public Sector option. The lead times for a PPP option are not significantly greater than that for a conventional procurement and build process.

The results of the GEM are set out in the following table that clearly shows that on an Equivalent Annual Cost basis the Preferred Option is ‘Option 2 - Reconfigure Foxhall ward’.
Table 12 - NPC and EAC by Option

<table>
<thead>
<tr>
<th>Option</th>
<th>NPV £’000</th>
<th>EAC £’000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 1 - Do Minimum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option 2 - Reconfigure Foxhall Ward</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option 3 - New Build Cardiology Unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option 4 - PPP Comparator</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6.5.5 Cost/Benefit Analysis

Taking the results of the Benefit and Financial Analysis undertaken previously and combining them gives the Cost Benefit matrix result as set out in the table below.

<table>
<thead>
<tr>
<th>Option</th>
<th>Weighted Benefit Score</th>
<th>Equivalent Annual Cost</th>
<th>Cost/ Benefit Score</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 1 - Do Minimum</td>
<td>560</td>
<td>5.67</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Option 2 - Reconfigure Foxhall Ward</td>
<td>845</td>
<td>3.55</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Option 3 - New Build</td>
<td>735</td>
<td>4.27</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

‘Option 2 - Reconfigure Foxhall ward’ stands out clearly as the Preferred Option, with the lowest cost per benefit point.

6.6 Recommendation and reasons for choice

The recommendation is to build two cardiology labs and 12 recovery bed areas. The weighted assessment above supports why this is realistically the only viable option if IHT truly aspires to deliver on its strategic objectives and to provide services that meet the needs of the local health population.

Professor Boyles report (June, 2009), the local media and the public are all united in supporting this development, as well as NHS Suffolk and other key stakeholders.

The business case base case has demonstrated that it returns both a year on year and cumulative surplus providing additional income into the organisation year on year.

Whilst the business case shows a decrease in the year on year surplus from 2014/15 because the case has been calculated using the mid to top pay costs, the reduction is likely to be less then shown. Also the opportunities mentioned in section 11 provide additional income generating options that would represent new income and further enhance the financial position shown, which has been shown can be accommodated within the facility in the Upside case in section 3.4.4.

The reconfigured Foxhall ward option consistently scored high compared with the other options. Some other explanatory notes in respect of the scores given are as follows:

- **Relationship to major users** – Option 2 scored highest due to its close proximity to the Radiology department and its central location on the site with good internal communication links both to other Cardiology facilities.

- **Clinical and Staff Support** - There is little support for staff to continue the current split site arrangement for the provision of the service and hence both the single site options score significantly higher. The marginal preference for Option 2 was due to
the staff perception that this was a better use of existing facilities and provided a more central location for the service than a new build elsewhere on the site.

- **Fit with IHT Estates Strategy** - No additional corridor space is required to link the Foxhall ward to the rest of the hospital thus maximising the existing Estate utilisation and the avoidance of standalone Buildings.

Foxhall ward is the recommended location as it would be suitable to provide the specifications of the current project brief, i.e. elective PCI, cardiac catheterisation and pacemakers.

### 6.6.1 Benefits and risks around reconfiguring Foxhall ward

Reconfiguring Foxhall ward offers a number of benefits over building a new facility on site:

- Better location;
- More effective use of space than working around constraints of a car park boundary;
- Lower capital requirement of reconfiguration of existing area
- In case of problems with IHT’s reconfiguration of Foxhall ward, IHT and our main commissioners can continue with the existing arrangements with Papworth.
- Running up-to-date buildings and equipment (whether new or reconfigured unit) will result in some efficiencies.

### 7. Financial Costs and Analysis of Preferred Option

This section of the business case provides the financial analysis and the cost assumptions of the Preferred Option.

#### 7.1 Assumptions

The base case modelling includes a number of assumptions that are mirrored in IHT’s Long Term Financial Model (LTFM).

The table below sets out the assumptions used for this case.

<table>
<thead>
<tr>
<th><strong>Table 14 –Financial Assumptions</strong></th>
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<tbody>
<tr>
<td><strong>Base Case</strong></td>
</tr>
<tr>
<td>1. Tariff Deflation</td>
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<td>2. Tariff Reduction</td>
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<td>3. Non-Pay Inflation</td>
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<td>6. Pay Costs</td>
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<td>7. Efficiency Savings</td>
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</tbody>
</table>
The case includes Staff Costs starting at the mid-point of each pay band; this is required to ensure the business case has provision to pay the staff costs should the staff eventually reach the top incremental position. It is unlikely however that all staff will be appointed to the mid-point or above of the pay salary range therefore in the earlier years the business case will potentially generate more surplus then has been shown as a consequence of that effect.

The modelling demonstrates that at the base level of activity the business case generates more surplus than it costs however because the activity forecast shows zero growth from 2013/14 the cost continues to rise (Pay and Consumables) whilst the income decreases in line with the assumptions mentioned earlier, therefore reducing the in year net surplus.

As stated previously the zero growth projection from 2013/14 was a negotiated position with NHS Suffolk and represents an extremely cautious approach to future activity volumes.

Leasing Costs for the existing equipment have been excluded from future costs (duplicated within Capital Charges assumptions). The actual method of acquisition of the equipment currently leased would be subject to a detailed evaluation at the time of procurement.

7.2 Revenue Costs – Base Case

The activity projections which are considered to be conservative have been adopted as the base case as they have been agreed with NHSS and the Anglia Stroke and Heart Network.

The public sector comparator for total capital investment required is £4.995M including Optimism Bias to build and equip the ICF. Staffing Costs have been established using the mid-point incremental pay point rising to top of pay band by Year 5 to ensure adequate provision in subsequent years for incremental changes under Agenda for Change.

Some staff are already involved in these activities however additional staff are required once both theatres and all the recovery bed areas are open, this includes all staff groups.

The elective PCI activity and the repatriation of additional cardiac catheterisation work will represent new income to the Trust. Only the additional / new activity has been shown in the income versus cost comparisons so the Trust Board can be assured that the existing income already being received for Cardiology is not also reflected in these financial statements.

The plan is devised on the basis that the newly built labs will be operational from July 2013; with 2014/15 representing the first full year of IHT providing an elective PCI service and having capacity for all the cardiac catheterisation activity.

The following table shows the summary position of the total income and cost for the current year and the projected changes over the next 5 years.
Table 15 - Summary Financials (Base Case)

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Table 16 - Summary Incremental Financials (Base Case)

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On the base position the modelling forecasts that the development starts to generate a net surplus year on year from 2013/14. The difference from the OBC is that the net surplus generated in 2012/13 and 2013/14 is reduced due to nursing staff starting earlier than originally thought in order to complete the training with Papworth.
Table 17 – Efficiency Savings Analysis

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<td>Staff Turnover (New Staff) - Vacancy Factor</td>
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</table>

**Staff Turnover**

Vacancy Factor - The Staffing Costs have been constructed at full cost for the full establishment. In practice a proportion of posts will not be filled at any moment in time and a vacancy factor of 4% is therefore built into the savings.

Incremental Point - The Staffing Costs have been calculated based on the incremental point of all staff rising from Mid Point of Scale to Top of Scale by 2017/18, a saving of 1% is assumed as in practice it is highly unlikely that all staff will be at top of scale at any point in the future given normal turnover.

**Improved Sessional Utilisation**

It is anticipated that after the initial bedding in period for the service, productivity will improve with more patients being seen on an interventional list than those assumed within the business case resulting in a reduction in the number of sessions required to meet the activity levels set out in the business case.

**Purchasing Savings**

Prices of Consumables/Devices have been costed at existing list prices, it is anticipated that purchasing savings will be made based on volume discounts and competitive tendering - a phased increase up to 10% of list price has been included.

**Reduced Trust Overheads**

A reduction in the Trust Overheads allocated to the Invasive Cardiology Scheme is expected in line with the Trust’s overall Cost Improvement Target, rising from 1% in 2013/14 to 11% by 2017/18.

The Revenue Costs for the Preferred Option is set out in Table 18 below, which includes the existing Revenue Costs of the ICS for comparative purposes.
Table 18 – Revenue Costs for the Preferred Option

<table>
<thead>
<tr>
<th>Cost Element</th>
<th>Existing Baseline Cost £'000</th>
<th>Additional Cost in Case £'000</th>
<th>Total Reconfigured Cost £'000</th>
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<tbody>
<tr>
<td>Staffing</td>
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<td>Other Hotel services</td>
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<td>Building Maintenance (Hard FM)</td>
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<td>Other Estate Expenses</td>
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<td>Capital Charges</td>
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<td>Trust Overheads @15% of Costs</td>
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<td><strong>Total</strong></td>
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<tr>
<td><strong>Total Excluding Capital Charges</strong></td>
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</table>

N.B. Capital Charges for baseline are assumed to be neutral as relate to Buildings only.

### 7.2.1 Revenue Finances in respect of Existing Service

The Revenue Costs for the existing invasive cardiology services are taken from the Cardiology Budget for 2011/12, plus services and other costs including IHT Overheads relating to the service provided. These costs do not include the Capital Charges on the existing Buildings and fittings, but do include the cost of the equipment which was on an operating lease at the start of the year.

The Revenue Costs for the existing services are shown inclusive of consumable items that are bought.

### 7.2.2 Revenue Change from Outline Business Case

The Revenue Cost has decreased from OBC stage by £161k, due to reductions in Staffing Costs and Trust Overheads. A small reduction in Capital Charges has also occurred as a direct result of the reduced Capital Cost associated with the Preferred Option.
### Table 19 – Change between OBC and FBC

<table>
<thead>
<tr>
<th>Cost Heading</th>
<th>Outline Business Case £’000</th>
<th>Full Business Case £’000</th>
<th>Change £’000</th>
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Notes:

1. Reduced Staffing levels based on additional analysis of sessional requirement.
2. Increased Domestic Services Cost based on quotation from existing supplier of services.
3. Reduced Efficiency Savings Target.
4. Reduction in Capital Charges following on from reduced Capital Spend.
5. Reduction in Trust Overheads relating to 'Fixed' Elements.

### 7.3 Revenue Costs - Upside Case

The activity projections used above in the base case are recognised by all stakeholders to be conservative forecasts.

The Invasive Cardiology Facility (ICF) will have spare capacity as identified in section 3.4.4. Our spare capacity creates opportunities to attract additional activity to IHT. A cardiologist currently working from a mobile suite at West Suffolk Hospital has indicated that they may also consider transferring their work to a new ICF at IHT, and other stakeholders have repeated this possibility. With additional capacity these tentative expressions of interest can be actively pursued and could open up new referral patterns for IHT as an additional benefit.

Based on the design capacity of the ICF, and maintaining the opening times but increasing the laboratory staffing levels to fully utilise Lab 2 activity could be increased by 20% across the three procedures comfortably. The following table is the Upside activity forecast used in the financial modelling.
Table 20 – Activity Upside Case (20% Activity increase on Base case)

<table>
<thead>
<tr>
<th></th>
<th>2014/15</th>
<th>2015/16</th>
<th>2016/17</th>
<th>2017/18</th>
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<tr>
<td>Elective PCI</td>
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<td>Pacemakers</td>
<td>397</td>
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This flat increase in activity across the three procedures could be varied as the allocated time for procedures is in multiples of 40 minutes. The key constraint is the recovery time and the number of beds required.

The Upside case summary financials below use the same financial assumptions as the base case in Table 14 excluding the activity assumptions which are as above in Table 20 and is assumed not to occur until start of fiscal year 2014/15 having bedded in the facility and operational processes in 2013/14.

Table 21 – Summary Financials (Upside Case)
Table 22 – Summary Incremental Financials (Upside Case)

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<tr>
<td>Percentage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value of Efficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Savings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Cost after</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency Savings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact on Contribution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Private Patient Activity

There is also the opportunity to utilise the spare capacity of the facility for private patient work, clearly this market is considered to be lucrative given that we are aware of one provider’s enthusiasm to gain a footing in this part of the region.

No assumptions for private activity have been built into the upside case but it would represent additional new income, and be at a greater income than tariff and thus represent a further increased profit position.

7.4 Capital Costs

The Capital Cost of the Preferred Option is set out in summary format in Table 23 below. A detailed Cost Report is enclosed within Appendix F along with the drawings and FBC Forms.

Table 23 – Indicative Capital Costs of the Preferred Option

<table>
<thead>
<tr>
<th>Option</th>
<th>Reconfigure Foxhall £’000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Costs</td>
<td></td>
</tr>
<tr>
<td>Fees</td>
<td></td>
</tr>
<tr>
<td>Cardiology Equipment</td>
<td></td>
</tr>
<tr>
<td>Contingency</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Optimism Bias</td>
<td></td>
</tr>
<tr>
<td>Inflation Adjustment</td>
<td></td>
</tr>
<tr>
<td>Total Including Optimism Bias</td>
<td></td>
</tr>
</tbody>
</table>
The Capital Costs have also been adjusted for inflation by the uplifting of MIPS from 480 Quarter 3 2011 to MIPS 487, the rate applicable at the time of construction.

### 7.5 Financial Affordability and Funding

The summarised Capital Programme set out in Appendix E, Table E1 identifies how the Capital Cost could be accommodated within the funding available to IHT.

The impact on the Trusts Balance Sheet and Income and Expenditure position for the next five years are set out in Appendix E, Tables E2 & E3.

It should be noted that the key downside risk to IHT is the loss of patient activity to a Third-Party supplier of services. This is considered to be a limited risk given the support of NHS Suffolk and the local GPs to provide this service at the Ipswich Hospital. Alternative suppliers of the service are at a significant distance from Ipswich and one of the major suppliers (Papworth Hospital) are proposing to work in collaboration with IHT with regards to the setting up of the new ICF and the sharing of medical staff between the two sites.

### 8. Timing

The following table is the baseline schedule of key milestones for the implementation of this business case. The detailed project schedule can be found in Appendix G.

**Table 22 – Key Project Milestones**

<table>
<thead>
<tr>
<th>Ref</th>
<th>Milestone Name</th>
<th>Baseline Target Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>Submission of Outline Business Case to SHA Capital Review Group</td>
<td>14/02/12</td>
</tr>
<tr>
<td>M2</td>
<td>SHA Capital Review Group approval of OBC</td>
<td>06/03/12</td>
</tr>
<tr>
<td>M3</td>
<td>Outline Agreement with Papworth</td>
<td>30/03/12</td>
</tr>
<tr>
<td>M4</td>
<td>Full Business Case approved by Trust Board</td>
<td>26/04/12</td>
</tr>
<tr>
<td>M5</td>
<td>SHA Capital Review Group approval of FBC</td>
<td>29/05/12</td>
</tr>
<tr>
<td>M6</td>
<td>Construction contract awarded</td>
<td>09/07/12</td>
</tr>
<tr>
<td>M7</td>
<td>ICF Construction commenced</td>
<td>27/07/12</td>
</tr>
<tr>
<td>M8</td>
<td>ICF Construction completed</td>
<td>15/03/13</td>
</tr>
<tr>
<td>M9</td>
<td>All Clinical staff in post</td>
<td>4/04/13</td>
</tr>
<tr>
<td>M10</td>
<td>Invasive Cardiology Facility ready for Operation.</td>
<td>3/5/13</td>
</tr>
<tr>
<td>M11</td>
<td>Interim Post Implementation Review</td>
<td>3/7/13</td>
</tr>
<tr>
<td>M12</td>
<td>All Staff trained for start of PCI service</td>
<td>13/9/13</td>
</tr>
</tbody>
</table>
9. Preferred Option Implementation

This section outlines the implementation plan to deliver an operational ICS from a new ICF.

9.1 Construction Strategy

The Preferred Option involves reconfiguring the existing Foxhall ward. The construction schedule can be found in Appendix H.

9.2 Workforce

The IHT ‘Business Unit 3 - Specialised & Older People's Medicine’ is responsible for resourcing the services as per requirements identified in section 3.4.3 and recruiting additional staff as required and ensuring training is completed ahead of the new ICF being operationally commissioned.

More detail on the services operational plans can be found in Appendix I.

9.3 Operational Service Project Management

After FBC approval the project team will be faced with the delivery of the Preferred Option which entails the challenging task of transferring current services (angios and pacemakers) and repatriation of activity (PCI and angios) to the new ICF, whilst minimising any impact upon patients and other clinical/diagnostic services.

It is understood by all concerned that this will require a very detailed level of clinical services project planning and a robust approach to risk and issue management to enable speedy resolution and closure. The need for an appropriately skilled and capable resource is recognised and funding for this has been included in the FBC and it is the responsibility of IHT ‘Business Unit 3 - Specialised & Older People's Medicine' to provide that resource.

9.4 Service Operational Plans

Outlines of the services operational plans, operating schedule and consultant cardiologist requirements can be found in Appendix I. These documents are a work in progress and form the basis of discussions that IHT has been having with Papworth and will be subject to further analysis and refinement over the coming months.

Other activities to be developed and agreed with various stakeholders during the period April 2012 to June 2013, covering but not exclusively include:

- Self assessment against all 16 CQC regulations
- Protocols, processes, patient material
- Patient material (including involvement of user groups)
- BCIS accreditation
- Review of business continuity plans, for new PCI service and changes to pacemaker and cardiac catheterisation services, and any resultant changes to critical information and IT systems.
• Transfer of activity from existing lab to new ICF i.e.
  o Timescales, phased or big bang
  o Pacemakers and angios, which goes first, together?
  o Impact to current staffing levels and other diagnostic services

• Repatriation of Activity from Papworth
  o PCI and angios, commissioning of 2013/14 activity
  o Repatriation over what time period
  o Easy cases first, period of a month or two dual running with Papworth

9.5 Equipment
IHT has identified the equipment implications by asset category for this project and equipment requirements have been costed and included in the financial modelling contained within this FBC in the context of:

  a. Any existing equipment and assets to be kept that are in use in the current service delivery and will be continue to be used in new ICF;
  b. New equipment and assets to be procured as part of this scheme for use in the new ICF.

9.6 Narrative of plan
The full project schedule can be found in Appendix G and the construction schedule in Appendix H. The following is a narrative of the key activities during implementation of this plan following authorisation of this business case by the SHA in May 2012:

May 2012
1. Conclusion of detailed design and cost plan.
2. Construction tender documentation production commences and order placed by Architects for specialist air quality plant to meet requirements for lead-times on equipment.
3. Construction tender issued, open for 4 weeks.
4. Development of clinical services operational processes, protocols etc. commences and continues over the next twelve months.

June 2012
5. Construction tender responses review and evaluation commences with a recommendation report to be delivered in July.
6. Confirm contract variations with Hotel Services provider in relation to cleaning of Foxhall ward.
7. Current occupants of Foxhall ward have vacated the whole area.
8. Place order for cardiology lab equipment with preferred supplier.

July 2012
9. Trust Board approval of preferred Contractor for development at special Board meeting.
10. Construction Contractor mobilisation commences.
11. Construction commences
October 2012
13. Phase 1 Recruitment of new staff commences and continues over the coming months.

January 2013
14. Phase 1 recruitment concludes, staff commence service
15. Phase 2 Recruitment of new staff commences and continues over the coming months.
16. PCI training with Papworth commences for existing staff

February 2013
17. Construction Phase 2 reconfiguration works completes
18. Commence ‘Fit out’ of cardiology labs by equipment manufacturer.
19. Confirm contract variations with Hotel Services provider in relation to cleaning of ICF.

March 2013
20. Completion of installation of cardiology labs equipment and operational commissioning of equipment and environment and all necessary sign-offs.
21. Staff training on use of cardiology labs equipment commences
22. Deep cleanse of ICF in preparation for staff to move into ICF

April 2013
23. Phase 2 recruitment concludes, staff commence service
24. All new nursing staff in post
25. PCI training with Papworth commences for new staff

May 2013
26. Staff training on use of cardiology labs equipment concludes

June 2013
27. Transfer of pacemaker and angio services to new ICF

July 2013
28. Interim Post Implementation Review meeting held with all stakeholders and lesson learnt report produced.
29. BCIS Formal accreditation process commences (duration approximately 3 months)

September 2013
30. Staff training completed in readiness for delivery of PCI service
31. BCIS accreditation peer review completed
32. Commence measuring patient experience for ICS in new ICF.

October 2013
33. PCI service delivery commences at IHT.

November 2013
34. Post Implementation Review conducted six months after operational commencement of ICF.

9.7 Risk Management Strategy
It is recognised that the operational service development and repatriation of activity carries a large number of risks and will require very detailed and rigorous management of these risks and resulting issues. This will be a key responsibility of the projects Operations Workstream Lead to lead and work with Commissioners, Papworth Hospital and other
service stakeholders to ensure all eventualities are identified, analysed, evaluated and mitigated as appropriate with resultant actions.

The project uses the Trust’s risk classification matrix (5x5) and maintains its own project and issue logs and where applicable if due to the nature of the risk the consequence is wider than the project, the risk and associated actions will be recorded on the Trust’s datix system.

The top 10 risks identified that are being mitigated and managed by the project team can be found in Appendix K.

It should be noted that a key downside risk to IHT is the loss of patient activity to a Third-Party supplier of services. This is considered to be a limited risk given the support of NHS Suffolk and the local GPs to provide this service at the Ipswich Hospital. Alternative suppliers of the service are at a significant distance from Ipswich and one of the major suppliers (Papworth Hospital) are proposing to work in collaboration with IHT with regards to the setting up of the new facility and the sharing of medical staff between the two sites.

The principle financial risk not accounted for in respect of contingency provisions, or addressed within the specific capital allocations is that of slippage on the Building Works timetable. It has been estimated that the potential cost of a month slippage on the programme would be in the order of £25k to 50k depending upon how late the slippage occurred and how far along the staff recruitment process the Trust was at the time of the slippage. This figure includes the anticipated reduction of costs from bringing the activity in-house and appointment of the additional staff to undertake the work. However, given the relatively straightforward nature of the construction it is not anticipated that this is a major risk.

9.8 Project Monitoring Plans
As the project develops its implementation plans there is a risk that stakeholders may misunderstand and become concerned about interim arrangements and the long-term solution. The project team plans to actively manage communication with key stakeholders throughout the implementation phase to prevent misunderstandings and the loss of stakeholder support. This will be the responsibility of the Operations Workstream Lead to lead on behalf of the project.

In addition to the above, the Operations Workstream Lead will be responsible for ensuring that cardiology services continue to operate smoothly during the transition period to the new ICF, they will develop and monitor/track progress on all the activities within their plan.

A single construction contract will be let and IHT will appoint a ‘Clerk of works’ who will manage all ‘build’ contractors and third-parties and be responsible for handing over to IHT a completed and operational ICF for occupation.

The Project Manager as identified in section 2 will continue to have overall responsibility for the delivery of this project and will continue to hold nominal monthly project team meetings with all workstream leads to track and monitor overall progress by workstreams against milestones.

10. Other Considerations

10.1 Relocation of current occupants of Foxhall ward
The proposed schedule of accommodation has been drafted and planned on the basis that it will be accommodated in the footprint of the current Foxhall ward area, Option 2. This area was originally available and ‘ear marked’ for this project some years ago however internal developments have resulted in Foxhall ward currently being occupied by the Pre-Operative Assessment (POA) Unit, admissions team and the Discharge Lounge.
An agreement has already been put in place to relocate the above services into a ward that has recently been closed as part of IHT’s efficiency initiatives.

10.2 Resilience

10.2.1 Contingency planning
A comprehensive contingency plan will be developed for the option approved by the IHT Board. This will build upon work already undertaken by the project team.

Contingency planning will address similar issues to those faced by the existing clinical services, such as equipment breakdowns, power supply interruption etc.

For all options, as highlighted in section 3.4.3 (Capacity Planning), a decision has been made to provide two labs which will enable a service to continue to be provided should one set of equipment in a lab fail.

10.2.2 Disaster recovery planning
When commissioned, IHT and Papworth will have the potential to provide a level of mutual support to the other in case of a major problem affecting one Trust’s Invasive Cardiology Service. There will not be sufficient spare capacity at either Trust to provide a comprehensive service to the other, but it will allow emergency procedures to be undertaken.

If there is a prolonged problem – for example following a major fire - it is likely that an agreement would be reached with Commissioners to delay electives whilst alternative providers are identified.

A full disaster recovery plan will be developed in parallel with the service development.

10.3 Horizon Scan:
The development of additional cardiac catheterisation capacity and the introduction of an elective PCI service offers further scope for potential developments at a later stage e.g. primary PCI if that was the strategic decision of the Trust and following consultation with the commissioners.

Additionally development of this service creates potential capacity in the existing shared laboratory for a potential expansion in other diagnostic areas currently experiencing capacity challenges.

The creation of two new laboratories will also ensure that IHT has the capacity to respond as cardiac services develop nationally.

Perhaps more fundamentally this development will ensure the continuation of our existing cardiac services by making IHT an attractive place to work in the future for consultant cardiologists. This development could become a catalyst that facilitates IHT’s cardiac services being launched as a regional centre of the future and our existing relationship with Papworth could lead to even greater working partnerships enabling the capture of new opportunities as they develop.

10.4 Business Opportunity Potential
As part of the work underpinning the development of this business case, options for exploring partnership working with other providers have been considered.

IHT has a long standing relationship with Papworth Hospital and there have been a number of conversations around how we might work together on this development. A supporting letter to this effect can be found in Appendix B.
The current plan does have some unused lab and recovery bed capacity from 2014 based on the base case projections, and four of the recovery areas will have en suite facilities. The facility is planned to operate Monday to Friday and the labs will not be used in the evening. This potential capacity could be a way of developing a private patient income stream for IHT as it is unlikely to be of sufficient magnitude to entice a private provider.

11. **Project Management Plans**

11.1 **Procurement**

The procurement strategy for this scheme is to Traditional Full Design and Tender. This route was chosen due to the construction cost being below £3 million and consisting of the refurbishment of an existing ward involving mainly mechanical and electrical building services reconfiguration.

Due to the high level of Building Services involved within this scheme it is believed that a Design and Build contract would require a disproportionate level of Contractor Management overhead (e.g. a building services coordinator etc.). Advice was sought from Castons (Quantity Surveyors) who confirmed that because of the building services nature and value of this scheme it is unlikely to be attractive to Procure 21 consortia.

11.2 **Health Gateway Review**

A Health Gateway Review was carried out from 15 August to 16 August 2011 at Ipswich Hospital. The primary purposes of a ‘Health Gateway Review 2: Delivery Strategy’ was to confirm the Outline Business Case was fully defined and ensure that the delivery strategy and/or procurement is robust and appropriate.

The Gateway Review rated the project overall as Amber – “Successful delivery appears feasible but issues require management attention. The issues appear resolvable at this stage of the project if addressed promptly” and concluded that the project is well managed and under control and the project team enjoys the confidence of key stakeholders.

The Review Team noted the issue “identify and reinforce Business Unit managerial and operational ownership of the proposed Invasive Cardiology suite (medical ownership is not in doubt) in order to fully validate the preferred layout and design and to prepare for full implementation and transition into business as usual ownership. This will enhance the case for BCIS accreditation and stakeholder approval”. The Review Team also noted “Good project management and engagement has taken the OBC to this point but further work is required to embed the operational and business change elements of the project.”

No further Health Gateway Review is planned for this project as it is been scored as Low risk using the Health Gateway: Risk Potential Assessment.

11.3 **Post Project Evaluation**

The project’s success will be evaluated against its objectives as detailed in section 4.1 of this FBC and will be reported to IHT’s Investment Scrutiny Committee (ISC).
Annex 1 – Supporting Information

Appendix A – NHS Suffolk Letter of Support

Appendix B – Papworth Letter of Support

Appendix C – IHT Cardiologist Letter of Support
Appendix D – Revenue Costs by Option

Table removed from publication as confidential
Appendix E – Funding Arrangements

Table E1 - Capital Programme 2012-13 to 2015-16

Table removed from publication as confidential
Table E2 – Income and Expenditure Account

Table removed from publication as confidential
Table E3 – Balance Sheet

Table removed from publication as confidential
Appendix F – FB Forms and Drawings for Preferred Option

FB Forms removed from publication as confidential

Appendix G – Overall Project Schedule

Appendix H – Construction Schedule

Appendix I – Service Operational Plans

N.B. Please note that the documents included in Appendix I are work in progress and form the basis of discussions that IHT has been having with Papworth and will be subject to further analysis and refinement over the coming month. These documents are included for illustration purposes to demonstrate progress to date.
## Appendix J – Detailed Benefit Scoring Matrix

<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Score</td>
<td>Weighted Score</td>
<td>Score</td>
</tr>
<tr>
<td>Fit with IHT Strategy</td>
<td>15</td>
<td>150</td>
<td>5</td>
<td>75</td>
<td>8</td>
</tr>
<tr>
<td>Fit with IHT Estates Strategy</td>
<td>15</td>
<td>150</td>
<td>7</td>
<td>105</td>
<td>8</td>
</tr>
<tr>
<td>Relationship to Major Users</td>
<td>25</td>
<td>250</td>
<td>6</td>
<td>150</td>
<td>8</td>
</tr>
<tr>
<td>Efficient Use of Resources</td>
<td>20</td>
<td>200</td>
<td>5</td>
<td>100</td>
<td>9</td>
</tr>
<tr>
<td>Clinical &amp; Staff Support</td>
<td>10</td>
<td>100</td>
<td>4</td>
<td>40</td>
<td>9</td>
</tr>
<tr>
<td>Speed of Access/Service</td>
<td>15</td>
<td>150</td>
<td>6</td>
<td>90</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>1000</td>
<td>33</td>
<td>560</td>
<td>51</td>
</tr>
</tbody>
</table>
**Appendix K – Project Top Risks**

The following is an extract from the project risk log that identifies the top risks as identified at the time of producing this FBC, and the mitigation actions that are being undertaken at this time.

<table>
<thead>
<tr>
<th>Risk Description</th>
<th>Impact, Assumptions &amp; Consequences</th>
<th>Management / Mitigating Action</th>
<th>Due Date</th>
<th>Consequence</th>
<th>Likelihood</th>
<th>Weighted risk factor (Conseq x Likeli)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruitment of skilled staff. Cardiac technicians &amp; Physiologists that are skilled and trained are difficult to attract and recruit.</td>
<td>Having a new purpose built development may assist in encouraging suitable applicants however it’s probable that some local training programmes may be required to ensure that by Q2 2013/14 the unit is appropriately staffed. There is a national shortage of trained Cardiac Physiologists. This will have an impact on Ipswich Hospital’s ability to recruit</td>
<td>Staffing levels identified as part of business case process. A recruitment plan under development which includes job descriptions. Advertising to commence Q3 2012/13 Contingency plans to be developed in case recruitment unsuccessful in required timeframe for start of service delivery, e.g. use of Bank and agency resources.</td>
<td>1-Apr-13</td>
<td>3</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Risk to current service areas when staff are removed for training.</td>
<td>These areas will require backfilling as there is a risk to patient services and achieving national targets. This impact will be across all areas: medical, nursing, cardiac physiology and radiography.</td>
<td>Finances to be identified for training In addition need to review possibility of Papworth staff coming on site to train and support staff in the initial stages of PCI Plan needs to cover existing staff in each area whilst minimising risk to patient services, targets plus cost.</td>
<td>1-Jun-13</td>
<td>3</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Requirement</td>
<td>Action required to IHT by 31st March 2013</td>
<td>Action required to enable capital funds to be committed by this date to meet DH requirement.</td>
<td>Cost impact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
<td>-------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiology Lab equipment not delivered to IHT</td>
<td>IHT will have to pick up the capital cost out of its own capital programme for the Cardiology lab equipment which would be of the order of £1.5m</td>
<td>Cardiology Lab equipment supplier evaluation and short listing commences in March '12 with decision for preferred supplier to be confirmed by April '12. Lead times for equipment are circa 12 weeks.</td>
<td>31-Mar-13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building construction slips by a month</td>
<td>IHT will have to pick up the capital cost out of its own capital programme for any elements of the construction that are not invoiced by 31st March '13.</td>
<td>Project plan in place for construction to complete by end of Feb '13. SHA has approved OBC so FBC is a refinement of OBC so achieving SHA approval by end of May '13 planned.</td>
<td>31-Mar-13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design of Invasive Cardiology Facility</td>
<td>A design omission means that operationally services cannot be delivered from new Facility until remedial actions are completed. Will add cost to project and delay income and thus benefits realisation.</td>
<td>Room data loadings will be populated and reviewed by those delivering the services. Room data to be reviewed by Papworth as an independent third party who already has such a Facility. Cardiology Lab equipment specification has key requirements but includes a clause that says Supplier must provide a working system to counter any omissions, e.g. cables, plug types etc</td>
<td>31-Mar-13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unable to design the ICF to be compliant with BREEAM 'Very Good' standards.</td>
<td>DH requirement is that all refurbished buildings are to be compliant with BREEAM 'Very Good' standards, failure of design to comply could result in FBC not being approved by SHA and this development thus not able to proceed to plan and unable therefore to commit new DH capital funding by 31st March 2013 which means the Trust would have to fund completion of development out of it own capital programme. Estimate that BREEAM will add £70k to project costs for consultant fees and increase costs for construction.</td>
<td>BREEAM consultants have been engaged and review and evaluation taking place against design. Dialogue is ongoing with SHA Head of Estates Development (Kevin Taylor) to manage expectations and assure required level of compliance and associated evidence is produced. Design review mtgs against BREEAM requirements scheduled. BREEAM certification process is underway and interim assessment indicates that design will meet BREEAM 'Very Good'.</td>
<td>26-Apr-12</td>
<td>4</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Integration of new Cardiology Lab IT systems with legacy systems at Trust goes over budget due to greater complexity than envisaged.</td>
<td>Costs increase for integration of IT solution for Trust legacy systems and take longer than planned and could delay delivery of services.</td>
<td>Requirements for integration of IT solution provided to Cardiology lab equipment manufacturers. Discussions to be had with prospective providers to ensure requirements are fully understood and compliance with requirements will form a key factor in chosen supplier.</td>
<td>1-Jun-13</td>
<td>4</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Forecast activity levels as agreed with commissioners are not robust and actual activity levels differ greatly.</td>
<td>Forecast activity levels for the services are based upon a number of assumptions as documented in business case. If these prove to be flawed and activity is significantly greater then designed services would not be able to cope with demand</td>
<td>Activity forecasts have continuously been reviewed by Operations and commissioners throughout the business case process. ICF has been designed to have 20% greater capacity than forecast activity levels. Current service activity levels to be monitored in 12/13 to assure forecast activity. Options exist to open ICF for longer periods and increase staffing levels.</td>
<td>31-Oct-13</td>
<td>3</td>
<td>3</td>
<td>9</td>
</tr>
</tbody>
</table>
Annex 2 - Glossary of Terms

BREEAM  Building Research Establishment Environmental Assessment Method
CQC  The Care Quality Commission
DH  Department of Health
FBC  Full Business Case
GEM  Generic Economic Model
HBN  Health Building Note
HTM  Health Technical Memorandum
ICF  Invasive Cardiology Facility
ICS  Invasive Cardiology Service
IHT  The Ipswich Hospital NHS Trust
MIPS  Median Index of Public Sector Tender Prices
NICE  National Institute for Health and Clinical Excellence
NPV  Net Present Value
ONS  Office for National Statistics
OBC  Outline Business Case
PSC  Public Sector Comparator
SHA  Strategic Health Authority