University Hospital Birmingham
NHS Foundation Trust

Birmingham New Hospitals Project
Full Business Case June 2006

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EXECUTIVE SUMMARY

Summary Statement of Investment Aims and Proposed Scheme

This Full Business Case (FBC) has been prepared jointly by the University Hospital Birmingham NHS Foundation Trust (UHBFT) and Birmingham and Solihull Mental Health NHS Trust (BSMHT).

Five years ago the Trusts agreed seven investment aims for the development of hospital services in South Birmingham.

	Investment Aims
1	Provide a centre of excellence in patient care
2	Contribute to the wider community's plans for the regeneration of South Birmingham
3	Create a focus for world-class teaching, training, education and research
4	Improve accessibility to services for patients and service users
5	Create a therapeutic and flexible environment from which high quality patient care can be provided
6	Work with all partners in and users of Birmingham's whole health economy to provide an integrated model of care
7	Make the most effective use of resources

The scheme proposed in this FBC is a direct response to meet these aims. In summary, the FBC sets out plans for:

- A new University Hospital on the current Queen Elizabeth Hospital site with 1,231 bed capacity.
- A new integrated model of mental healthcare with community teams working more closely with inpatient services as 'whole systems', together with new inpatient facilities for adults on the Queen Elizabeth site and at Showell Green Lane in Sparkhill together with an Older Persons Unit at Moseley Hall hospital.

The scheme is to be procured through Consort under the Private Finance Initiative resulting in a capital cost of £553.4 and an annual unitary charge to the Trusts of just under £48 million.

Overview of Trusts and Local Health Economy

University Hospital Birmingham NHS Foundation Trust (UHBFT) is one of the largest NHS Trusts in Britain. The Trust comprises two large Hospitals, Selly Oak and the Queen Elizabeth, located within a mile and a half of each other in the south-western suburbs of the City. UHBFT is widely recognised as one of the top performing NHS organisations. The Trust is the West Midlands' leading teaching Trust and hosts the only Royal Centre for Defence Medicine in the country.

Birmingham and Solihull Mental Health NHS Trust is the largest mental health teaching trust in the West Midlands. It was created on the 1st April 2003 following the merger of Northern Birmingham and South Birmingham Mental Health Trusts. The Trust provides a range of local, regional and supra-regional mental health services.

The former South Birmingham Mental Health Trust covered South Birmingham PCT, Solihull PCT and Sparkbrook and Sparkhill areas of the city. This FBC provides for new capital developments in the southern sector only.

Trust Key Facts			
	UHBFT	BSMHT	Total
Annual Budget 2003/4	£306m	£167m	£ 473m
Staff Employed	6,762	3,862	10,624
Patients Treated per annum	512,000	40,000	552,000
Number of beds	1,092	900	1,992
Catchment Population	450,000	1,200,000	

Birmingham and the Black Country Strategic Health Authority (BBCSHA) has a resident population of about 2.25 million. Although geographically it is one of the smallest SHAs (803 sq km covered), it is the fifth largest SHA in England based on population. Population projections show that the BBCSHA population is set to grow by 3.8% over the next 17 years with the highest rises expected in the 70-84 and over 85 age bands which are anticipated to grow by more than 9% and 50% respectively by 2021. Both these increases will have a significant impact on consequent health need.

Minority ethnic groups constitute 30% of Birmingham's population compared to 21% for the whole SHA and 5% for the UK.

Analysis demonstrates that Birmingham is the worst ranking district in the country for income and employment deprivation, and can be shown to be within the worst 10% for other deprivation indicators. Some parts of South Birmingham have amongst the highest rates of mental illness in the city.

South West Birmingham is undergoing significant suburban regeneration and the Trusts' current hospital sites sit in an area of major planned change which will see the development of an A38 High Technology Corridor through Selly Oak and Northfield.

Located within Birmingham and the Black Country Strategic Health Authority the Trusts' key commissioners (based on annual spend) are summarised in the table below.

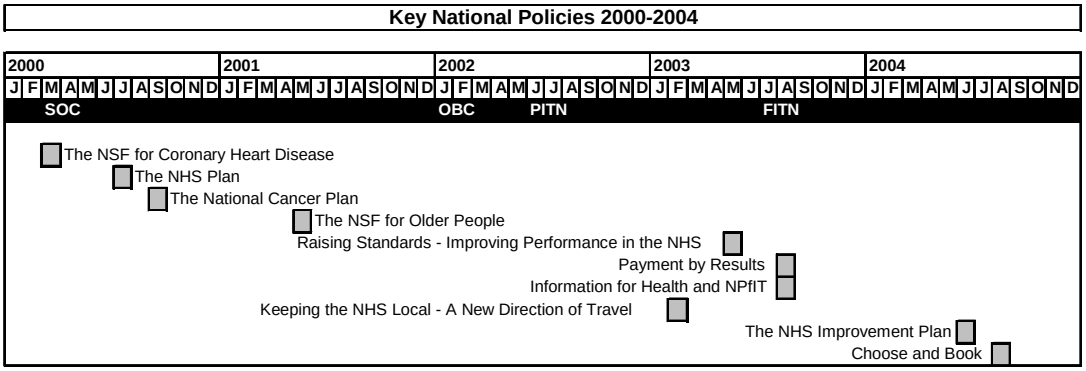
Commissioning Organisation	UBHFT (£m)	BSMHT (£m)	Total	% Spend
South Birmingham PCT	87,363	35,722	123,085	30
Pan Birmingham Consortium	61,193		61,193	15
Heart of Birmingham PCT	17,535	29,830	47,365	12
Black Country Consortium	12,465		12,465	3
NSCAG	11,768	8,662	20,430	5
Regional Consortium Services	11,039	21,009	32,048	8
Redditch & Bromsgrove PCT	4,572		4,572	1
West Midlands South LSG	12,561		12,561	3
East Birmingham PCT	5,217	19,271	24,488	6
North Birmingham PCT	3,238	10,874	14,112	3
Solihull PCT	4,259	13,048	17,307	4
Other	32,392	8,424	40,816	10
Total	**263,602**	**146,840**	**410,442**	**100**

Note : Figures represent income for healthcare. Total Trust budgets include additional funds for education, training etc.

Background to Project

The National Agenda

This business case is being developed at a time of major strategic change across the NHS. Key government initiatives that have been announced during the development of these proposals are shown in the figure below.



FBC Response to NHS Policies and Initiatives

NHS Policy/Initiative	Key Themes	FBC Response
NHS Plan/NHS Improvement Plan	Patients will be admitted for treatment within a maximum of 18 weeks from referral by their GP, and those with urgent conditions will be treated much faster.	Planned capacity and service models are based on achieving low waiting times and fast throughput in all areas. Targets will be met before new hospital opens but new facility and service models will provide the means to exceed these targets in the next decade.
	All NHS Trusts will be in a position to apply for NHS Foundation Trust status.	Already achieved for UHB. In progress for BSMHT.
	There will be incentives for healthcare providers to offer care that is efficient, responsive, of a high standard and respects people's dignity.	The new development and service models foresee a provision of service consistent with that expected in the 21st Century. Almost half the ward beds in the new acute hospital and most of the mental health beds will be in single rooms
	More staff will work in the NHS and will be encouraged to work more flexibly in a way that best responds to patients' needs.	Hospital and community based services will see significant changes in staffing over the next decade. More information is provided in Chapter 10.
	In every care setting the quality of care will continue to improve with the Healthcare Commission providing an independent assurance of standards, and patient safety being a top priority.	The introduction of new service models and a modern environment will place the Trust in the best possible position to provide services which are of transparent high quality.
	Health services designed around the needs of the patient.	Development of new integrated service models for acute care and mental health.
	Provision of new hospitals and associated infrastructure to improve the overall quality of NHS estate.	The FBC will result in the building of a single site, modern, state of the art hospital, proving acute services and mental healthcare together with a teaching, training and research centre. Split site working will be eliminated and poor clinical adjacencies improved.
Keeping the NHS Local	Patients will have access to a wider range of services in primary care, including access to services nearer their workplace.	The FBC anticipates a transfer of work into the community equivalent to about 8% of current beds.
	Local communities will have greater influence and say over how their local services are run, with local services meeting local priorities.	The UHB Trust has recently achieved Foundation status and has attracted more members from the public to its Board and membership than any other Foundation Trust.

NHS Policy/Initiative	Key Themes	FBC Response
Coronary Heart Disease, Cancer, Older People	Further progress in tackling the biggest killer diseases, with the country on track to secure by 2010 a 40% fall from 1997 in death rates from heart disease and stroke, and a 20% fall in death rates from cancer.	The Trust is a specialist centre for both cardiac and cancer care. The FBC plans for significant developments in both areas. All current targets will be met before new hospital opens and sustained, improved thereafter.
	Major investment in services closer to home will ensure much better support for patients who have long-term conditions, enabling them to minimise the impact of these on their lives.	The FBC allows for investment in the community but the strategy for developing local services will be developed by the PCT over the next few years.
	Older people will receive appropriate specialist care by hospital staff who have the right set of skills to meet their needs.	The new service model for acute care will ensure that older people receive the most appropriate care in an environment most suited to their condition. The new integrated mental health service model will result in an older adult mental health facility being integrated with the existing elderly physical health service.
Payment by Results	Patients will be able to be treated at any facility that meets NHS standards, within the national maximum price that the NHS pays for the treatment they need.	Quality standards are already consistent with the best the NHS has to offer and will improve further. Future Trust income is calculated from current national tariffs.
Choose and Book	Patients will be able to choose between a range of providers, including NHS Foundation Trusts and treatment centres.	The new development will enable the acute Trust to be the hospital of choice for patients in south and west Birmingham and beyond.
	Electronic prescribing will improve the efficiency and quality of prescribing.	Prescribing systems in the new hospital will be state of the art.
Information for Health	Development of fully integrated IT systems to facilitate the delivery of patient care.	Provision of IT network and infrastructure through FBC. Other services to be procured separately through the National Programme for IT.

The Need for Investment - Acute

The case for change for acute services was set out extensively in the Outline Business Case and has a number of strategic drivers, namely:

- The need to improve **services** to ensure they are patient focussed and meet the rising expectations of the public.
- The need to develop **human resources** to ensure that both the number and roles of future staff are appropriate to deliver to future healthcare agenda.
- The need to reconfigure the **estate** to optimise clinical adjacencies and ensure that future services are provided from facilities appropriate to 21st century healthcare.
- The need to develop **information management and technology** systems to support future service delivery in line with the NHS strategy for IM&T development.

The need to develop services is by far the most important element of the case for change. The Trust's problems are far-reaching and complex, and have been the subject of ongoing and extensive reviews for the last 10 years. Significant problems arise from split-site working, poor buildings design and inadequate processes stemming from the current layout of physical infrastructure.

The Trust has a total backlog maintenance of £95.71m and a capital spend of circa £13m per annum over seven years only brought a real benefit of £7.6m in terms of backlog reduction.

The latest condition survey highlights that only 49% of the Estate has appropriate functional suitability and almost 20% is either grossly overcrowded or underused. Only 26% of the Estate has adequate physical condition. The majority of wards were developed from accommodation

following the Nightingale design and single sex accommodation has only been achieved using screens that do not provide adequate privacy.

To respond to these issues, and to seize the opportunity provided by a new hospital development, UHBFT has undertaken extensive work to develop a model of care which is now a key part of UHBFT's strategic direction.

Key principles underpinning the model include a single portal entry for emergency admissions, separation of emergency and elective activity, combined critical care, centralised ambulatory care, diagnostics and operating theatres supported by significant developments in Information Technology.

The model of care represents a patient focused, flexible and streamlined approach to healthcare delivery and has directly influenced the physical design of the new hospital buildings to ensure that clinical adjacencies are optimised to facilitate efficient and effective patient flows.

The Need for Investment - Mental Health

There have been a number of factors driving the need for change in mental health services at a national, regional and local level which have ultimately led to this proposal.

National / Regional	Local
• Modernising Mental Health Services - 1998	• Implementation of the NSF
• NSF Adult Mental Health - 1999	• Single sex accommodation
• NSF Older People - 2001	• QEPH fundamental problems
• NHS Plan - 2000	• New model and philosophy of care
• Regional Policy	• Changing demand
• Birmingham Mental Health Strategy - 2000	• Local Human Resource Factors
• Birmingham HImP	• Better primary, secondary and social care interfaces
	• Pan Birmingham Mental Health Strategy

Specifically, the Queen Elizabeth Psychiatric Hospital was built in the 1980s to facilitate the closure of the old mental health hospitals that served south Birmingham. Although a relatively new building, it was not designed with the flexibility to enable the delivery of modern mental health services.

The need for investment in mental health facilities derives directly from the new service model which aims to facilitate a shift in the primary focus of care from the hospital to the community and provide services which are local and accessible with an emphasis on early assessment and prompt treatment. South Birmingham has therefore been divided into localities.

In order to provide services that are local and accessible, enhanced Community Mental Health Services with 24-hour capacity will provide the full range of care components of the integrated service in each locality as summarised below:

- Home treatment/crisis resolution
- Assertive outreach and continuing needs service
- Primary care mental health service
- Respite beds

- Integrated inpatient services
- Early intervention services

An important structural difference between the OBC and FBC is that the three locality inpatient units originally proposed are to be replaced by two locality-based adult units, however the integrity of the model remains intact since there will still be three Home Treatment Teams.

Inpatient treatment beds will be provided as follows:

- Separate buildings on the QEMC for Adults Services, serving South Birmingham PCT, and Specialities which incorporates accommodation for the University, Library R&D and FM Services, including a restaurant facility;
- A further Adult facility in Sparkhill serving part of the HoB PCT;
- An Older Adult facility at Moseley Hall Hospital, integrated with the existing elderly physical health service.

Business Case Development

SOC and OBC Approval

In November 2000 a Strategic Outline Case (SOC) was submitted to the Capital Prioritisation Advisory Group (CPAG). The scheme was granted Ministerial Approval in February 2001 and prioritised nationally in the fourth wave of major PFI developments. The announcement permitted the Project to proceed to the production of an Outline Business Case (OBC), which was subsequently approved in March 2002.

Based on the original investment aims and the case for change, clear objectives and benefits were developed which have been used consistently at each stage of the appraisal process.

PFI Procurement Process

The Trust then tested the market for interest from potential commercial partners under the government's Private Finance Initiative. The process followed is summarised below.

PFI Procurement Process	
April 2002	OJEC issued PQQ issued - 4 responses
July 2002	PITN issued - 3 responses
Feb 2003	FITN issued to 2 bidders
Sep 2003	FITN responses. Additional work undertaken to address affordability issues arising from FITN output specification
Jan 2004	Preferred bidder selected and letter issued

The preferred provider for the scheme is Consort which was selected after a rigorous evaluation exercise that included the health community and members of staff and the public. Consort was selected because it presented an affordable scheme with a significantly better design than the competing bids. Consort has consistently shown willingness and enthusiasm in meeting the Trusts' requirements in terms of the design, operation and commercial arrangements of the development.

Activity

Taking into account demographic changes, prevailing activity trends, agreed specific growth cases (mainly for specialist services) and the planned transfer of intermediate care activity into the community, the overall projections of activity and performance to the year 2011 (when the new hospital becomes fully operational) are contained in the following table:

Comparative Activity and Performance 1997 to 2011					
Category	**1997**	**2001**	**2004**	**2011 FBC**	**cf 2008 OBC**
Finished Consultant Episodes (FCEs)					
Emergency inpatients	31,295	32,592	47,624	53,648	36,245
Elective inpatients	20,805	16,473	18,483	18,721	16,970
Day Cases	20,167	23,207	23,426	32,652	37,598
Regular attenders	19,690	20,457	26,437	26,433	23,190
Total FCEs	**91,957**	**92,729**	**115,970**	**131,453**	**114,003**
Admissions					
Emergency inpatients	*25,868*	*26,940*	34,686	39,073	*29,955*
Elective inpatients	*20,660*	*16,358*	18,300	18,535	*16,852*
Day Cases	*19,960*	*22,969*	23,194	32,328	*37,598*
Regular attenders	*19,690*	*20,457*	26,437	26,433	*23,190*
Total Admissions	**86,178**	**86,724**	**102,617**	**116,370**	**107,595**
New outpatients	99,812	95,387	110,062	122,942	109,381
Follow up outpatients	226,516	273,179	301,832	338,126	236,542
Total Outpatients	**326,328**	**368,566**	**411,894**	**461,048**	**345,923**
Occupied Bed Days					
Elective inpatients	88,721	78,153	85,100	102,614	100,289
Emergency inpatients	233,994	242,478	270,470	249,931	214,184
Total OBDs	**322,715**	**320,631**	**355,570**	**352,545**	**314,473**
A&E attendances	n/a	68,920	76,145	95,000	87,776
Average LOS					
Elective inpatients (days)	4.3	4.7	4.7	5.5	5.9
Emergency inpatients (days)	9	9	7.8	6.4	7.1
Combined ALOS (days)	**6.9**	**7.4**	**6.7**	**6.1**	**6.7**
Other Performance					
Day Case Rates	49%	58%	56%	64%	69%
Weighted average % occupancy	90%	92%	95%	82%	82%
Outpatient DNA rate	**14%**	**14%**	**9%**	**5%**	**5%**

Inpatient activity in this full business case is expected to be higher than that predicted in the outline business case partly as a result of significant increases in both elective and emergency inpatient admissions between 2001 and 2004. This business case does not assume however a straight line extrapolation of this trend because of the way in which care delivery has changed and will continue to change both within the trust (more rapid assessment and admission where necessary in emergency cases) and within primary care (community based alternatives to hospital admission).

Capital Costs

The capital costs of the PSC, at MIPS 415 VOP, are assessed at £593.9m including VAT but excluding inflation. At OBC the capital cost of the scheme (as it then was) came to just over £306 million including VAT at MIPS 310 VOP.

Much of the difference is due to the changes in the nature and scope of the scheme as it has evolved over the last three years (eg new mental health solution), and to the changes in the MIPS index.

Public Sector Comparator v Preferred PFI Solution

A non-financial appraisal of the PSC v PFI solutions identified that the PFI solution was the preferred option with a 7% lead over the PSC. Both schemes demonstrated that they would deliver the desired benefits but the PFI scheme had better design characteristics and improved clinical adjacencies.

An economic appraisal of the two proposals has been undertaken. Discounted cash flow analyses over 66 years and 41 years yield the results below.

Risk Adjusted Economic Comparison – 66 years

	BSMHT			UHBFT		
	Base NPV	Risk	Risk Adjusted NPV	Base NPV	Risk	Risk Adjusted NPV
	£000	£000	£000	£000	£000	£000
PSC	2742281.5	18491.0	2760772.5	7165395.8	133990.0	7299385.8
PFI	2735576.0	8533.0	2744109.0	7143177.0	64429.0	7207606.0

Risk Adjusted Economic Comparison – 41 years

	BSMHT			UHBFT		
	Base NPV	Risk	Risk Adjusted NPV	Base NPV	Risk	Risk Adjusted NPV
	£000	£000	£000	£000	£000	£000
PSC	2553455.5	18327.0	2571782.5	6661727.0	133227.0	6794954.0
PFI	2547001.0	8387.0	2555388.0	6636112.1	61143.0	6697255.1

In both analyses, the PFI solution offers better VFM in comparison with the PSC for both the acute and mental health elements of the scheme.

The Proposed PFI Scheme

The scheme will deliver the completion of a modern, state of the art acute hospital including inpatient and outpatient services, diagnostics, critical care, accident and emergency, therapies and clinical support. The new facilities will incorporate:

- Capacity for 1231 beds (with over 100 critical care beds, more than 100 dedicated ambulatory care beds and a patient hotel; also includes an 18-bed decant ward);

- 30 operating theatres;
- 40 imaging rooms; and
- Clinical space for close to half a million outpatients and attendances each year.

The new hospital will significantly improve quality by bringing all hospital services on the two current sites together into modern, purpose-built accommodation which will facilitate the implementation of new service models designed to deliver a more patient focused and efficient approach.

The mental health component of the scheme proposes:

- Locality based adult inpatient units to be developed on the Showell Green Lane site in Sparkhill and on the Queen Elizabeth Medical Campus site in Edgbaston.
- A specialities unit also to be developed on the QEMC site.

In addition, an older persons unit will be developed. The contract signed with Consort includes a facility to vary the main scheme to build this at Moseley Hall hospital. This business case includes the revenue consequences of exercising that variation.

Non-clinical services that will be provided over the life of the contract comprise:

- Hard facilities management services (including lifecycle requirement) for the new development;
- Provision, maintenance and replacement of Class A and A* equipment, and the provision and maintenance of Class B equipment;
- Information communications infrastructure.

Equipment, IT systems and soft FM services are not part of the proposed scheme and will be the subject of separate business cases to be developed over the next few years.

Human resource issues

Birmingham New Hospitals Project will impact on all employees working within the Acute Trust and a significant proportion of those Mental Health Trust employees. All employees working within Hard FM from both Trusts together with ICT/Voice from UHBFT are covered by TUPE regulations. A total of 83 NHS employees will transfer to Haden Building Management Ltd (HBML) and Kingston Communications. The Trusts have confirmed that both HBML and Kingston Communications have provided GAD approved comparable pensions for those Trusts' staff subject to the transfer. Both have confirmed that the GAD certificates will continue to be renewed and will be valid at time of the transfer of employees.

UHBFT recognises that in order to deliver new models of care within the newly provided hospital significant workforce development will be required. To ensure the successful operation of the new hospital a Transformation Group has been established. Significant workforce profile change issues are to be addressed within this Group in order to support the modernisation of clinical services provided within the new hospital.

The mental health service model supports a process in which severe mental health illnesses are managed predominantly by our specialist mental health services and common mental health problems are managed predominantly by primary mental health carers. Detailed work has been undertaken in relation to workforce profiles and projected requirements including skill mix and role development to support delivery of the recruitment plan.

Both Trusts have communication strategies in place and will continue to focus on keeping their workforces abreast of project progress while maintaining communication and project involvement with their staff.

In summary:

- The Trusts have demonstrated an inclusive approach to the involvement of Trade Unions and Staff Representation at all points within the project and will continue to do so throughout the project's lifetime.
- There are plans in place to manage the transfer of employees from both UHBFT and BSMHT through an agreed TUPE process and supporting Transition Plan. Both Trusts and Project Co have worked jointly in consulting with employee's and their representatives regarding any planned staff transfers.
- The impact of not transferring the Soft FM workforce to Haden has been considered.
- The transformation of the UHBFT workforce is being managed and coordinated to ensure that the required clinical changes are achieved and that the appropriate mechanisms are in place to modernise the workforce to deliver the necessary clinical care.
- The Trusts are cognisant of the impact that these new developments will have on the local workforce economy; they understand the potential impact of other local and regional health care developments on their ability to recruit from particular professional staff groups.
- Staff in both Trusts have been fully engaged in developing plans and models of care for the new hospital and continue to be integral to the project's development.

PFI Affordability

This FBC shows that based on current models and assumptions the scheme is affordable to both trusts.

The assumptions include a planned level of savings, transitional support and phased commencement of assumed growth which are detailed in chapter 9.

To minimise the risk that the projected future activity does not arrive, the Acute Trust has agreed to postpone its commitment to develop three inpatient wards (comprising 108 specialty beds) which will be left as shell accommodation in the new hospital building. These wards are the subject of a contract variation which can be exercised within 18 months of financial close without financial penalty. If the contract variation is not exercised in this timescale, the costs of developing the wards at a later date will be significantly more. To justify the full development of the wards, a separate business case will be required prior to the variation deadline.

Financing of Scheme

Funding arrangements for the scheme are currently being finalised. The headlines for these funding arrangements are as follows:

- Term of the agreement with Consort - 40 years 2 months from Financial Close with the operational phase being between 35 and 38 years;
- The scheme has a first Service Payment £43.425m and a NPV including Interim Service Payments (at 6% real) of £442.447m at 31 March 2004 prices;
- The Service Payment will vary during the operating period due to the impact of inflation, to be updated on 1st April each year from April 2005 using the Retail Prices Index (all items);

- Capital receipts and 3rd party income from commercial retail developments and car parking will reduce the Service Payment for the Trusts;
- Consort has adopted Composite Trader tax structure in addition to Finance Debtor accounting;
- A variety of methods and sources of funding are being used with 92% coming from debt and 8% from equity;
- Bond as opposed to bank funding has been selected as the best value for money funding route;
- Consort have reserve account requirements placed on them to retain sufficient cash in the SPV to meet lifecycle requirements and lenders' covenants;
- The project company's internal rate of return will be [redacted]% post tax (nominal) and the debt cover ratio will be 1.22 on average.

Timetable

There is a set timetable for the delivery of fully operational facilities by 2012. A summary timetable of events leading up to project completion is provided below:

New Hospital Project Timetable		
	Milestone	**Date**
Past	SOC Approved	February 2001
	OBC Approved	March 2002
	OJEC Advert Placed	April 2002
	Preferred Bidder Selected	January 2004
	Full Planning Consent for QE Site granted	October 2004
	Full Planning Consent for Showell Green granted	October 2004
	Full Planning Consent for Moseley Green granted	December 2004
	Secure Full Planning Consent	December 2004
Future	FBC Approval	May 2006
	Financial Close	June 2006
	Start on site	June 2006
	Opening of Mental Health Facilities	June 2008
	Opening of Acute Hospital:	
	Phase 1a	June 2010
	Phase 1	June 2010
	Phase 2	November 2010
	Phase 3a	June 2011
	Phase 3	October 2011
	Retained Estate Works Complete	August 2012

Summary of Benefits and Post Project Evaluation

The scheme will deliver a wide range of benefits, most of which accrue from the provision of a better working environment more appropriate to the delivery of modern healthcare. Many of these benefits apply to both the PSC and PFI solutions. However, the PFI scheme provides the added benefits of better clinical adjacencies and synergies, shorter distances between wards and departments, and a more appealing design. There is also a significant transfer of risk under the PFI solution.

A full benefit realisation plan has been developed to ensure that the benefits identified in the various stages of the appraisal process actually materialise when the scheme is complete. Similarly, after financial close, the construction period, and three years of operation, post projection evaluation will be undertaken to assess whether the scheme has delivered the benefits in reality.

Key Risks and Contingency Plans

The Trusts have developed a comprehensive risk register identifying all of the risks associated with the project.

Of particular concern is the issue of "right sizing" the hospitals. Using the latest data and trends, UHBFT has confirmed the capacity of the new hospital is appropriate for the levels of activity predicted and that the associated performance targets can be achieved. The delayed development of three ward areas will act to mitigate the risk that activity projections are over-optimistic. The achievement of the performance targets will be supported by a package of developments within the local health community aimed at keeping patients out of hospital.

Strategies for IM&T and Equipment

The Trusts' IM&T requirements and Strategies for the future are directly linked with the National Programme for IT (NPfIT) strategy to provide electronic NCRS to the level at which information systems both underpin and support the new models of care.

At UHBFT this will be delivered in two parts. The first is the ICT infrastructure which is to be procured as part of the PFI programme. The second element is the introduction of the NPfIT NCRS throughout the Trust. The ICT Infrastructure for UHBNFT which includes the supply management and maintenance of all data and voice equipment and associated cabling and containment, is ring fenced within the scope of the PFI project. The staffing and operation of the telephone switchboard remains the responsibility of the Trust. There is a clear payment mechanism defined specifically relating to ICT which has been developed to address the performance requirements of the service.

Consort will take responsibility for ICT service provision soon after Financial Close. However, due to the fast changing nature of ICT, the ICT Service is for an initial 12 year period, after which the Trust will go back to the market or consider in house service provision.

The BSMHT ICT requirements differ from UHBNFT, because the PFI programme is replacing one building out of a total of over 100 Trust sites. The PFI programme includes the provision of the cabling (passive) infrastructure solution to the PFI sites. All the active equipment (including telecommunications, data switches and routers) will be designed, built, financed and operated by BSMHT ICT staff and as such will be outside the PFI ICT scope. The PFI sites will be fully integrated into the BSMHT data network and will be able to fully access all local and national systems.

At this stage medical equipment does not form part of the overall Project Agreement between the Trusts and Consort, except for the physical transfer of items. At FITN the Trusts tested whether a managed service for major medical equipment would be affordable and demonstrate value for money within the context of the main PFI procurement. Evaluation of the FITN bids showed that a managed service for equipment was not affordable and did not represent value for money.

The Trusts therefore decided not to continue with the procurement of the Managed Equipment Service under the main PFI. The working assumption is that the Trusts will procure equipment themselves with public funding. Because of the long construction period, procurement of the equipment will not commence until 2007.

Local Stakeholder Ownership and Support for Scheme

The FBC is the output of an integrated clinical and community project that has received commitment from a number of Project Stakeholders:

- Birmingham and Black Country Strategic Health Authority (BBSHA), South Birmingham PCT and Heart of Birmingham PCT and the Pan Birmingham Consortium as the key commissioners.
- More than 1,000 staff and service users across both Trusts have been actively involved in the development.
- Staff side representation on various project groups.
- Patients and the public have been involved from the outset through patient councils, user groups and a specially convened partnership advisory group.

Request Approval from DH and HMT

The detailed analysis undertaken within this project has shown that the PFI solution is best value in economic terms, is affordable to the NHS locally, and will allow for real improvement in the quality of healthcare in South Birmingham.

The Department of Health and HM Treasury are therefore asked to approve the proposals in this Full Business Case.

INTRODUCTION

2.1 Purpose of the FBC

This Full Business Case (FBC) has been prepared jointly by the University Hospital Birmingham NHS Foundation Trust (UHBFT) and Birmingham and Solihull Mental Health NHS Trust (BSMHT).

The document describes a deliverable and affordable strategy to shape the future of acute and mental health services in South Birmingham. It sets out plans for a new University Hospital supported by an enhanced acute model of care, and a range of associated community developments.

It also incorporates the development of a new integrated locality model of mental healthcare, including new inpatient facilities for BSMHT. In both cases, patients will have access to both local and specialist care, bringing together the best clinical services and research that the NHS can provide in association with the academic community and other partners.

Financial Close is scheduled for the end of January 2006, following approval of the Full Business Case (FBC) by Her Majesty's Treasury and the Department of Health.

2.2 The Trusts

2.2.1 UHBFT

University Hospital Birmingham NHS Foundation Trust (UHBFT) is one of the largest NHS Trusts in Britain. Created in 1995, the Trust comprises two large Hospitals, Selly Oak and the Queen Elizabeth, located within a mile and a half of each other in the south-western suburbs of the City; they are 4 miles and 3 miles respectively from the City Centre.

Table 2-1: Trust Key Facts - UHBFT	
Annual Budget 2003/4	£306m
Staff Employed	6,762
Patients Treated per annum	512,000
Number of beds	1,092
Catchment Population	450,000

UHBFT is widely recognised as one of the top performing NHS organisations. The Trust has achieved a small financial surplus in each of its years of operation since becoming an NHS Trust in 1995, has achieved 3 star status for 3 consecutive years and received a favourable CHI clinical governance review in 2003. Waiting times are amongst the lowest in the country.

The Trust is the West Midlands' leading teaching Trust and, with the University of Birmingham, is a leading provider of medical undergraduate and postgraduate training. It enjoys successful partnerships with other academic institutions including the University of Central England (UCE), training undergraduates in allied professions and nursing.

The Trust hosts The Royal Centre for Defence Medicine (RCDM), which opened on 2 April 2001 and received Royal Assignation in April 2002. It will grow over the next few years to meet the requirements of the Defence Medical Services (DMS). DMS medical officers, nursing and allied health professionals are allocated to various wards including intensive care, oncology, burns and plastic surgery, high dependency beds, operating theatres and the accident and emergency department. In all, the Centre has currently 170 permanent staff fully integrated into UHBFT and University of Birmingham and 150 students based at University of Central England.

Figure 2-1: UHBFT Location map

A more detailed description of the services delivered across the two sites is provided in Chapter 3.

2.2.2 BSMHT

Birmingham and Solihull Mental Health NHS Trust is the largest mental health teaching trust in the West Midlands. It was created on the 1st April 2003 following the merger of Northern Birmingham and South Birmingham Mental Health Trusts. The Trust provides a range of local, regional and supra-regional mental health services.

Table 2-2: Trust Key Facts - BSMHT	
Annual Budget 2003/4	£167m
Staff Employed	3,862
Patients Treated per annum	40,000
Number of beds	900
Catchment Population	1,200,000

BSMHT has three key responsibilities as:

- The provider of general mental health services to a local population of Birmingham and Solihull.
- The provider of specialist, tertiary services to a wider catchment population on a regional and supra-regional basis. Specialist services include: the Mother & Baby Service; Services for People who are Deaf; the Eating Disorder Service; Specialist Psychotherapy and Psychology; Neuropsychiatry; Neurophysiology; and the Forensic Psychiatric Service.
- A partner with the Universities of Birmingham and Central England, and other academic and clinical institutions. The University of Birmingham Department of Psychiatry is based within the Queen Elizabeth Psychiatric Hospital (QEPH). The Trust is involved in both undergraduate and postgraduate education, including the continuing professional development of consultant grade doctors in the West Midlands.

Prior to merger the Northern Birmingham Mental Health Trust catchment population include the following PCT areas: North Birmingham, Eastern Birmingham and the Heart of Birmingham excluding Sparkbrook and Sparkhill.

South Birmingham Mental Health Trust covered South Birmingham PCT, Solihull PCT and Sparkbrook and Sparkhill. This FBC provides for new capital developments in the southern sector only; the north Birmingham sector has already implemented a PFI scheme which is now fully operational. This was an earlier scheme and did not have the benefit of Standard Form. The operational experience of the service regime has brought focus in the drafting of

the original Non-clinical Output Specifications and the Schedule 14 drafting. Also people who experienced the process have been involved in the clinical and non-clinical review group exercise.

2.3 Key Commissioning Organisations

The Trusts' key commissioners are summarised in the tables below. UHBFT's overall catchment of 450,000 population is comprised of a local catchment for DGH services of 410,000 with significantly wider catchments for specialist services. Of the Trust's total healthcare income of around £264 million in 2003/4, just under 80% was accounted for by eight commissioners as follows:

Table 2-3: UBHFT Key Commissioners

Commissioning Organisation	Spend (£m)	%Spend
South Birmingham PCT	87,157	33.3
PBSSC	61,192	23.4
Heart of Birmingham PCT	17,734	6.8
Black Country Consortium	12,465	4.8
Regional Consortium Services	11,039	4.2
Redditch & Bromsgrove PCT	4,572	1.8
South Worcestershire PCT	2,608	1.0
Burntwood, Lich' & Tam' PCT	5,357	2.0
Other	61,478	22.8
Total	**263,602**	**100**

The breakdown of income for BSMHT is as follows:

Table 2-4: BSMHT Key Commissioners

Commissioning Organisation	Spend (£m)	%Spend
South Birmingham PCT	35,772	24.3
PBSSC	29,830	20.3
Heart of Birmingham PCT	19,271	13.1
Black Country Consortium	10,874	7.4
NSCAG	13,048	8.9
Regional Consortium Services	21,009	14.3
Redditch & Bromsgrove PCT	8,662	5.9
South Worcestershire PCT	1,321	0.9
Burntwood, Lich' & Tam' PCT	2,013	1.4
Other	5,091	3.5
Total	**146,840**	**100**

2.4 Project Vision & Investment Aims

The Project Board approved the following Vision for the Project:

> Birmingham will have an internationally-recognised centre of excellence, providing modern and dependable adult acute healthcare, and integrated mental health services. It will be a focus for world-class education, training and research. Internally, the buildings will be dynamic, able to respond to ever-changing patient needs and functionally fit for purpose. In response to the outcome of the public consultation processes, interior design and artworks will be used to create a therapeutic environment that is conducive to the provision of high quality healthcare. Externally, the buildings will reflect the very best in contemporary architectural design.

The Board also agreed a series of overarching Investment Aims, which reflect the multi-stakeholder significance of the Project. These are shown in the table below.

	Table 2-5: Investment Aims
1	Provide a centre of excellence in patient care
2	Contribute to the wider community's plans for the regeneration of South Birmingham
3	Create a focus for world-class teaching, training, education and research
4	Improve accessibility to services for patients and service users
5	Create a therapeutic and flexible environment from which high quality patient care can be provided
6	Work with all partners in and users of Birmingham's whole health economy to provide an integrated model of care
7	Make the most effective use of resources

The objectives and benefits derived from these Investment Aims were explored in detail in the OBC and are revisited in Chapters 5, 6-8 and 17 of this FBC.

2.5 Background to the FBC

2.5.1 SOC and OBC Approval

In November 2000 a Strategic Outline Case (SOC) was submitted to the Capital Prioritisation Advisory Group (CPAG). The scheme was granted Ministerial Approval in February 2001 and prioritised nationally in the fourth wave of major PFI developments. The announcement permitted the Project to proceed to the production of an Outline Business Case (OBC), which was subsequently approved in March 2002 with an excellent Gateway Review rating.

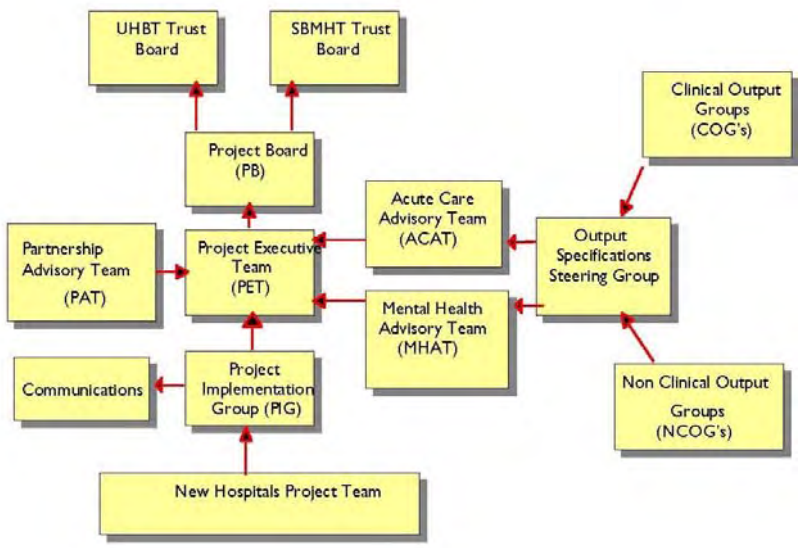
2.5.2 PFI Procurement

The Trusts then tested the market for interest from potential commercial partners under the government's Private Finance Initiative. The PFI procurement process, described in more detail in Chapter 7, culminated in the selection of Consort as the preferred bidder.

2.6 Process for Developing the FBC

The FBC has been developed by an integrated UHBFT/BSMHT Project Team, supported by a robust and fully-inclusive project structure. The project structure is summarised in Figure 2-2 below and described in more detail in **Appendix 2A**.

Figure 2-2: FBC Project Structure



2.7 Stakeholder Involvement

The FBC is the output of an integrated clinical and community project that brings together a number of Project Stakeholders from different organisations, including:

- Birmingham and Black Country Strategic Health Authority (BBCSHA)
- South Birmingham PCT
- Heart of Birmingham PCT
- The Ministry of Defence (MoD), the University of Birmingham (UoB) and Birmingham City Council (BCC).

2.7.1 Clinical Ownership

More than 1,000 staff and service users, in both Trusts, have been organised into over 60 clinical and non-clinical working groups over a period of five years. These groups have developed the detail behind clinical and service models that will enable the delivery of high quality, cost-effective, patient-focused care.

The involvement of the full range of professional groups in the planning has resulted in strong clinical support for the proposals contained in this document. This clinical ownership will be key to delivering all elements of the Project.

2.7.2 Staff Consultation

This spirit of partnership working has been extended to include Staff Side representation on various elements of the Project Structure:

- **Project Board** – two Staff Side Representatives, including the nominated Full Time Officer (FTO) for both Trusts. The FTO ensures that staff views are fully understood and reflected.
- **Joint Workforce Advisory Team (JWAT)** – staff representatives from both Trusts focusing on specific HR aspects of the Project referred from the Project Board.

- **Acute Care and Mental Health Advisory Teams** – Staff Side representation on these Teams ensures crucial staff input to the clinical aspects of the Project.
- **Clinical and Non Clinical Review Groups** – responsible for reviewing and developing design and service proposals in response to the Trusts output based requirements.

2.7.3 Patients and the Community

Patients and the public have been involved from the outset. The Trusts' patient councils, user movements (for example the BSMHT Service User Reference Group) and a specially convened partnership advisory group (consisting of local stakeholders, the media, volunteers and patients) have also provided advice on all aspects of the Project.

2.8 The Scheme

2.8.1 What is the Scheme?

Selly Oak and the Queen Elizabeth (QE) Hospitals are to be replaced by a single-site modern state of the art acute hospital. The Project also includes the reconfiguration of mental health services for South Birmingham. Mental Health services will have a facility for specialist services and adult services for the locality on the QE site, and a further adult services locality site in Sparkhill. Services for older people will be developed at Moseley Hall Hospital.

2.8.2 What is the scope of the planned development

The scheme is one of the largest building projects in Birmingham. Similar in size to the Bullring development it will bring more than 1,000 jobs and investment to the south of the city. The new acute hospital will have up to 1,231 beds (including an 18 bed decant ward) and cover 147,000m^2. There will be a total of 203 beds in three buildings for the new mental health facilities.

It will also create a world class teaching, training and research centre. A pedestrian plaza complete with public artworks and a new integrated transport interchange adjacent to the existing station will link the hospital campus with Birmingham University's medical school. The plaza is not part of the PFI but will be let as a separate contract.

Part of the scheme will include a new clinical science centre in conjunction with the University of Birmingham. The physical integration of hospital and university facilities will support the joint working between the two organisations.

The Royal Centre for Defence Medicine (RDCM) will form an integral part of the new hospital development. It will provide new training and administrative accommodation for the RCDM and there are also plans to move all military medical training to a site close to the new hospital.

2.8.3 Where will the new facilities be built?

The main acute hospital will be built on the current Queen Elizabeth hospital site. A new south locality adult mental health unit and specialties building will also be developed on the Queen Elizabeth Medical Centre (QEMC), on the land south of Vincent Drive. University, Research and Development and FM Services will be accommodated in the specialties building. A Heart of Birmingham (HoB) locality unit will be developed on the former Womens Hospital site in Showell Green Lane and an older adult mental health facility will be developed on the Moseley Hall Hospital site.

2.8.4 Who will build the new hospital facilities?

The new hospital is to be procured through the government's Private Finance Initiative (PFI) through a consortium called Consort Healthcare who have already been involved in large hospital schemes in Edinburgh and at University College, London.

Table 2.6: Consort Healthcare	
Construction Partner	Balfour Beatty
Service Provider	Haden Building Management
Architects	Building Design Partnership Nightingale Associates
Healthcare Planning	Healthcare Environments SDC

A list of Consort's advisors is provided in Chapter 8 with a full project management structure at Appendix 8A.

2.8.5 How will the scheme integrate with other local plans?

The new University Hospital and the majority of mental health inpatient services will be provided in a prime location close to the University railway station. The development of a public transport interchange, the improvement of bus services, and the establishment of a Green Travel Plan will make it highly accessible by public transport.

The Project is integral to the wider, £3½ billion urban regeneration of England's Second City, and crucial to the successful economic and environmental development of the A38 technology corridor in the South of Birmingham. This regeneration includes the construction of the Selly Oak bypass and New Hospital link road which will improve vehicular access to the Queen Elizabeth Hospital site from the south, east and west.

2.8.6 What will happen to the current estate?

When the new acute hospital is fully operational Selly Oak Hospital is likely to be sold or demolished, as it will no longer be required to provide healthcare services. The proceeds from the sale of the Selly Oak site will assist in the funding of the new hospitals. However, options around the future of Selly Oak are still under discussion.

2.8.7 What is not included in the scheme?

Equipment, IT systems and soft FM services are not part of the proposed scheme and will be the subject of separate business cases to be developed over the next few years. The strategies for procuring these services are developed in Chapters 11 and 12.

2.9 Timetable

The following table shows the timeline of key events to date and the development timetable for major milestones leading up to the opening of the new facilities:

Table 2-7: New Hospital Project Timetable

	Milestone	Date
Past	SOC Approved	February 2001
	OBC Approved	March 2002
	OJEC Advert Placed	April 2002
	Preferred Bidder Selected	January 2004
	Full Planning Consent for QE Site granted	October 2004
	Full Planning Consent for Showell Green granted	October 2004
	Full Planning Consent for Moseley Green granted	December 2004
	Secure Full Planning Consent	December 2004
Future	FBC Approval	May 2006
	Financial Close	June 2006
	Start on site	June 2006
	Opening of Mental Health Facilities	June 2008
	Opening of Acute Hospital:	
	Phase 1a	June 2010
	Phase 1	June 2010
	Phase 2	November 2010
	Phase 3a	June 2011
	Phase 3	October 2011
	Retained Estate Works Complete	August 2012

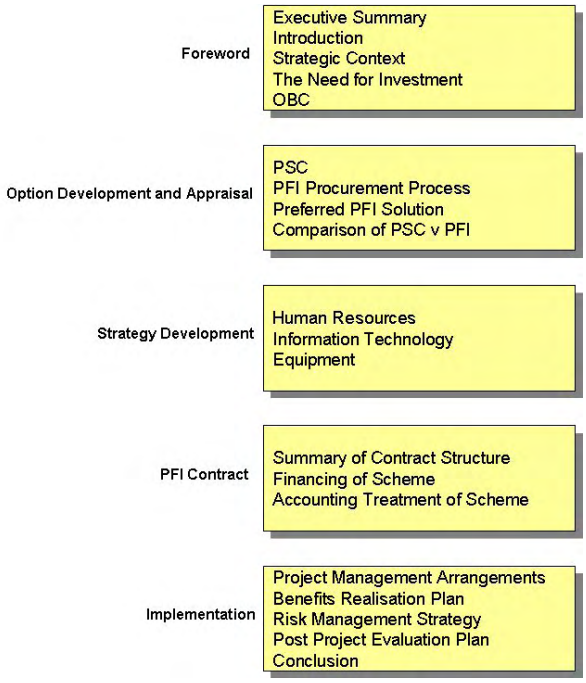
This development plan would see mental health facilities opening in 2008 and the new acute hospital opening in phases from 2010. Over the following two years the remaining elements of the estate which are to be retained will be refurbished. A master construction & commissioning programme is included as Appendix 2B.

2.10 Document Structure

This FBC has been structured to provide a clear logic for the proposed development and to explain the financial and non-financial implications and risks of the change, and how these will be managed.

The main FBC document is in 20 Chapters as shown in Figure 2-3 below:

Figure 2-3: Main FBC Document



In addition, two further supporting volumes make up the complete FBC:

- A volume of Appendices to the main FBC document
- An FBC annex containing substantive supporting documentation including the Trust Estates Strategy, site plans and detailed drawings, AEDET analyses and the equipment register

2.11 Approvals

This FBC has been formally approved by the following key local stakeholders:

Table 2-8: Stakeholder Approvals

Organisation	Signatory	Position	Date	Appendix
UHBT	John Charlton	Chairman	220506	2C
BSMHT	Jonathon Shapiro	Chairman	250705	2D
Birmingham & Black Country SHA	David Nicholson	Chief Executive	251105	2E
	Cynthia Bower	Acting Chief Executive	020606	2E
South Birmingham PCT	Graham Urwin	Chief Executive	210305	2F
Heart of Birmingham Teaching PCT	Anthony Sumara	Chief Executive	180305	2G
West Midlands South LSCG	Catherine Griffiths	Chair	210305	2H
Black Country LSCG	Rob Bacon	Chair	210305	2I
East Birmingham PCT	Sophia Christie	Chief Executive	Mar 05	2J
West Mids Specialised Services Agency	Karen Helliwell	Chair	170305	2K

STRATEGIC CONTEXT

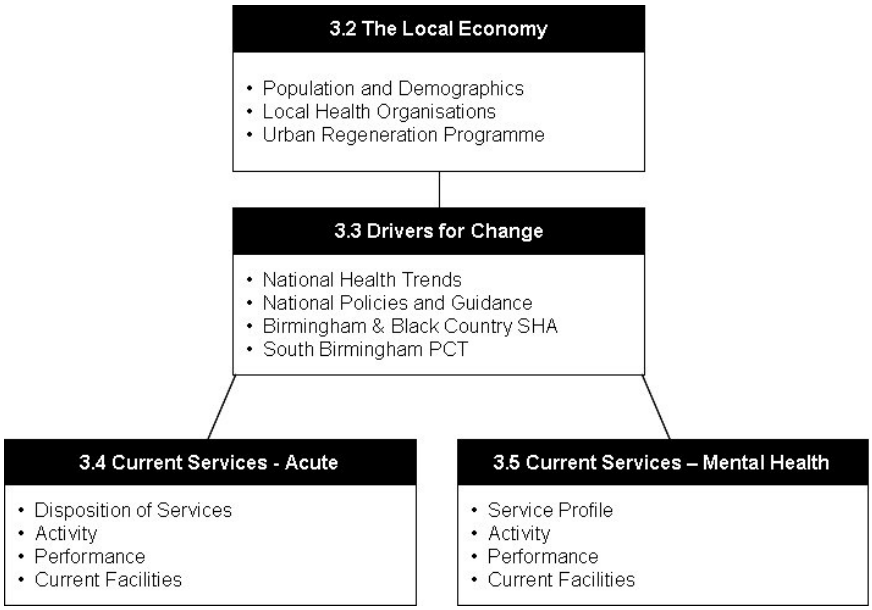
3.1 Summary

- Birmingham & Black Country Strategic Health Authority (BBCSHA) is the fifth largest in the country with a resident population of 2.25 million. Around 1 million people live in Birmingham City.
- The overall population is not set to change significantly but considerable growth is expected in the elderly.
- Minority ethnic groups constitute 30% of Birmingham's population compared to 21% for the SHA and 5% for the UK.
- Analysis demonstrates that Birmingham is the worst ranking district in the country for income and employment deprivation.
- Based on the Mental Illness Needs Index (MINI) all but three electoral wards have higher than average indicators of need for mental illness with Sparkbrook and Sparkhill in particular having the highest scores in the city for rates of mental illness.
- South West Birmingham is undergoing significant suburban regeneration and the current acute hospital sites sit in an area of major planned change which will see the development of an A38 High Technology Corridor through Selly Oak and Northfield.
- This business case is being developed at a time of major strategic change across the NHS. This change has been driven by a range of key policies developed by the Department of Health which sees increased investment supporting a significant agenda for the improvement of services. The policy context for this FBC includes the NHS Plan and NHS Improvement Plan together with a number of important National Service Frameworks
- This FBC is consistent with a the SHA strategic framework “A Wider View” published in September 2004. This document sets out a distinct set of priorities for health and health services in the Strategic Health Authority’s area for the period 2004 to 2010.
- South Birmingham PCT commissions services for a population of 383,000 in the immediate catchment of the Trusts’ services. The FBC has been developed in conjunction with the PCT and the respective strategies of the two organisations are in complete harmony, particularly with respect to avoiding hospital admissions and the development of more community services.
- Acute services are currently provided on two sites - Selly Oak Hospital and the Queen Elizabeth Hospital, which are located 1½ miles apart in SW Birmingham and are 108 and 67 years old respectively. Together the two hospitals provide a comprehensive range of general and acute care.
- The acute catchment ranges from 410,000 for DGH services to over 4 million for the Trust’s supra-regional specialties. The Trust receives over 76,000 admissions and 110,000 new outpatients per annum.
- UHBFT has earned 3 stars for performance for the last two years and has met or exceeded all prevailing targets for waiting times.
- In mental health, the Southern Sector provides a wide range of local, regional and supra-regional mental health services from the Queen Elizabeth Psychiatric Hospital and an additional 40 plus sites across the south of the city.
- The 197 beds in the QEPH are constantly fully occupied.

3.2 Introduction

This chapter describes the local health economy in which the Trusts are operating together with the wider themes and catalysts for change, both national and local. The Trusts' current services are profiled, together with a breakdown of prevailing activity levels. This chapter is shown in the figure below.

Figure 3-1: Overview of Strategic Context



3.3 The Local Economy

3.3.1 Population and Demographics

Birmingham and the Black Country Strategic Health Authority (BBCSHA) has a resident population of about 2.25 million. Although geographically it is one of the smallest SHAs (803 sq km covered), it is the fifth largest SHA in England based on population. The four PCTs in Birmingham (Eastern Birmingham, Heart of Birmingham Teaching, South Birmingham and North Birmingham) account for about 1 million of these residents and Solihull a further 200,000 (see Table 3-1 overleaf).

About 2.43 million are registered with GP practices of the 12 Primary Care Trusts in the SHA. The reason for the difference between resident and registered population is unclear and is likely to be a combination of understated resident population figures and some registration inflation caused by patients moving between practices. However, analyses of Trust workload within the Birmingham conurbation that are based on resident population figures alone, could potentially understate the true position.

Table 3-1: Population by PCT for BBCSHA	
PCT	**Population**
Dudley Beacon and Castle	111,920
Dudley South	192,946
Eastern Birmingham	208,590
Heart of Birmingham Teaching	250,898
North Birmingham	160,335
Oldbury and Smethwick	88,054
Rowley Regis and Tipton	91,095
Solihull	199,493
South Birmingham	357,541
Walsall Teaching	253,239
Wednesbury and West Bromwich	103,837
Wolverhampton City	236,548
Total for SHA	**2,254,496**
Total for Birmingham	**977,364**

Source: ONS 2001 Census

3.3.2 Population Estimates

The results of the 2001 Census provide a basis for population projection estimates for Birmingham. The predicted growth in the total SHA population has just been released by ONS (Jan 2005) and is summarised in Table 3-2 below.

Table 3-2: Population Projections for BBCSHA

Age Band	2004	2011	% change	2021	% change
0-4	146.1	152.1	4.1%	158.1	8.2%
5-9	149.1	147.1	-1.3%	152.5	2.3%
10-14	159.0	141.1	-11.3%	145.2	-8.7%
15-19	160.9	153.9	-4.4%	145.0	-9.9%
20-24	158.2	175.1	10.7%	156.0	-1.4%
25-29	141.3	161.5	14.3%	164.7	16.6%
30-34	163.3	144.5	-11.5%	168.1	2.9%
35-39	173.4	146.8	-15.3%	154.1	-11.1%
40-44	162.0	172.4	6.4%	142.9	-11.8%
45-49	138.2	166.2	20.3%	145.6	5.4%
50-54	129.1	138.2	7.0%	160.5	24.3%
55-59	129.8	119.5	-7.9%	149.2	14.9%
60-64	109.2	119.9	9.8%	120.9	10.7%
65-69	100.4	101.5	1.1%	101.1	0.7%
70-74	87.9	87.4	-0.6%	99.1	12.7%
75-79	73.2	72.2	-1.4%	78.8	7.7%
80-84	55.2	54.3	-1.6%	58.7	6.3%
85+	39.4	49.5	25.6%	60.6	53.8%
All Ages	**2275.8**	**2303.1**	**1.2%**	**2361.2**	**3.8%**

Though more local details are not currently available the projection summaries show that the BBCSHA population is set to grow by 3.8% over the next 17 years. This is equivalent to an

annual increase of 0.22% which is fairly neglible. However, this overall growth rate hides some notable shifts in the population profile as indicated below.

Table 3-3: Impact of Changes in Population

Population Change	Health Impact
There will be a 3% increase in the number of older people (those aged over 70) during the remainder of this decade. The highest rise (26%) is expected in the over 85 age band which is anticipated to grow by more than 50% by 2021. The number of residents in the 50-70 age band will also rise considerably (by 13%) over the next 17 years. Overall the number of people under 50 will fall slightly. The number of children in the 0-4 age band will rise by 8%.	The elderly population makes the most demands on the health service. The FBC is therefore planning for significant increases in access to service used primarily by the elderly including ophthalmic services, urology, renal, diabetes-related conditions, cancer, cardiovascular and ischaemic heart disease and rehabilitation services. It is not so long ago that the 50-70 age band would have been considered elderly. However, though the general health of this population is expected to be much higher than the previous generation, more maintenance will be required in all of the services mentioned above; much of it in particular will be linked to chronic disease management.

3.3.3 Ethnicity of Birmingham Residents

Birmingham has a significant percentage of residents from minority ethnic groups and a large number of electoral wards with widely differing standards of living.

The 2001 Census data revealed that minority ethnic groups constitute 30% of Birmingham's population compared to 21% for the SHA. This in turn compares to a 5% figure for the UK as a whole.

Table 3-4: BBCSHA Ethnic Minorities

PCT	White %	Mixed %	Asian %	Black %	Other %
Dudley Beacon and Castle	91	1	6	2	0
Dudley South	95	1	3	0	0
Eastern Birmingham	80	3	12	5	1
Heart of Birmingham Teaching	29	4	52	13	2
North Birmingham	91	2	4	3	1
Oldbury and Smethwick	69	3	22	6	0
Rowley, Regis and Tipton	89	2	7	2	0
Solihull	95	1	3	1	1
South Birmingham	84	3	8	3	1
Walsall Teaching	86	1	10	1	0
Wednesbury and West Bromwich	80	2	14	4	0
Wolverhampton City	78	3	14	5	1
Total	**79**	**2**	**14**	**4**	**1**
Total for Birmingham	**70**	**3**	**20**	**6**	**1**

Source: ONS 2001 Census

Table 3-5: Impact of Ethnic Minorities on Health Provision

Key Observations	Health Impact
The largest minority ethnic group in Birmingham are Asians (20%) with Pakistanis forming the largest single minority ethnic group. In Heart of Birmingham Teaching PCT 71% of the residents are from minority ethnic groups. Different communities are concentrated in particular parts of the City. The Pakistani community tends to be concentrated in the South East of Birmingham, while those from the African Caribbean community are largely concentrated in West Birmingham. The black and minority ethnic communities are a much younger population than the majority community. Almost 40% are aged under 16 compared to around 20% of the white population. In 2000, over half of the school population of Birmingham was composed of pupils from the black and minority ethnic communities, and this trend is set to continue. *(Source: Birmingham City Council Annual Report, 2000).* 18% of people from the black and minority ethnic community in Birmingham are aged 65 or over. This will increase significantly over the next few years, as 37% are currently in the age band 45 to 59. There tends to be less migration out of the City by ethnic minority older people compared to their white peers.	There are a number of illnesses that have been proven to have higher incidence and prevalence in minority ethnic people including diabetes and renal disease. Interpreting and translating services are required to cover the four families of language (with as many as 20 sub-groups) that are commonly spoken in the City. Dietary and food preparation requirements must be understood with specific arrangements made for their provision. 28% of patients treated at UHBFT are either non-Christian or have no stated religion *(Source: UHBFT Nexus Project, 1999)*. People from all faiths (including those with no stated faith) have specific requirements for sacred space - quiet spaces away from the unnatural atmosphere of a hospital. The ethnicity of 21% of clients seen anywhere in BSMHT are non-white. In the inner city areas of Sparkhill and Sparkbrook more than 40% of the population is from the Asian sub-continent. Over the next 10 years the local workforce will be increasingly made up of young, black people and older white people, with the working population forming a lower proportion of the whole.

3.3.4 Deprivation

The Index of Multiple Deprivation (IMD), produced by the Department for the Environment, Transport and the Regions (DETR), enables analysis of the City's relative position as measured against a number of key variables.

Table 3-6 provides a comparison of Birmingham's ranking against four (out of 354) other district's (Leeds, Leicester, Liverpool and Manchester) selected for their similarity.

Table 3-6: Analysis of the Index of Multiple Deprivation 2001

City	Income Scale	Employment Scale	Average of Ward Ranks	Extent
Birmingham	1	1	23	37
Leeds	4	4	114	71
Leicester	12	23	28	18
Liverpool	2	2	3	7
Manchester	3	3	6	4

Notes: The higher the ranking the ***worse*** the comparative position, ie, a ranking of 1 makes the "district" the most deprived in the country.

Income scale: the number of people who are income deprived
Employment scale: the number of people who are employment deprived
Average of ward ranks: summarising the district as a whole including both deprived and less deprived wards
Extent: the proportion of a district's population living in the wards which rank within the most deprived 10% of the country.

The analysis demonstrates that Birmingham is the worst ranking district in the country for income and employment deprivation, and can be shown to be within the worst 10% for the other two variables.

3.3.5 The Health Needs of Birmingham's Residents

Birmingham is organised geographically around 11 parliamentary constituencies, comprising a total of 37 electoral wards. Whilst BSMHT provides services to all Birmingham (and Solihull) residents, five of these constituencies lie within the catchment areas of the two Trusts for the purposes of this FBC:

- Edgbaston (comprising Quinton, Bartley Green, Edgbaston and Harborne wards)
- Hall Green (Brandwood, Billesley and Hall Green)
- Northfield (Weoley, Longbridge and Northfield)
- Selly Oak (Selly Oak, Moseley, Bournville and King's Norton)
- Sparkbrook and Small Heath (Sparkhill, Sparkbrook, Fox Hollies and Small Heath)

Previous analysis, set out in more detail in the OBC, has shown that:

- Life expectancy is much shorter in areas where there are high unemployment, low incomes and social isolation. This is particularly evident in wards with a high minority ethnic population. Not everyone has access to good primary healthcare and many people from these communities are unaware of or feel unable to access the full range of services, including health education, which are available.
- There is a high percentage of persons with Limiting Long Term Illness (LLTI) in certain areas of Northfield, Selly Oak, Hall Green, Sparkbrook and Small Heath.

Specifically for Birmingham, the analysis identified that:

- Compared with a Birmingham-wide percentage of 15.7%, there are more young adults in Selly Oak and Sparkbrook and Small Heath. 'Young adults' refers to the ONS age band of 15 – 44 years. It has been epidemiologically proven that this age band is more susceptible to a first onset of mental illness.
- Compared with a Birmingham-wide percentage of 6.6%, there are more elderly people who are susceptible to acute illness and longer hospital stays in Edgbaston, Hall Green and Selly Oak.
- Generally, South Birmingham has proportionately more white people than Birmingham as a whole though, at ward level, Sparkbrook and Small Heath have proportionately more black and South Asian people.
- There are relatively high General Practitioner (GP) workloads in Sparkbrook and Small Heath, and to a lesser extent in Edgbaston and Selly Oak.
- Sparkbrook and Small Heath have a higher proportion of long term limiting illness than Birmingham as a whole (13.2% of households).
- Life expectancy at birth is less than Birmingham as a whole (75 years) in Hall Green, Sparkbrook and Small Heath.
- Certain wards in south Birmingham rank very poorly on a national level on a number of variables – including income and population density – in the Index of Multiple Deprivation.

3.3.6 MINI Scores for the South Sector Electoral Wards

The Mental Illness Needs Index (MINI) is a census based indicator of need for mental health care. It brings together a number of social and economic factors which are associated with

high rates of admission to acute psychiatric inpatient care. These factors are compiled into a weighted index which may then be used to predict the prevalence of acute psychiatric admission in an area. A score of 100 approximates to the national average.

The social factors used in compiling the index are:

- Proportion of adults single, widowed or divorced;
- Proportion of population living in a household with no access to a car;
- Proportion of adults permanently sick;
- Proportion of economically active adults unemployed;
- Proportion of population living in a household that was not self-contained; and
- Proportion of population living in hostels, hotels, boarding houses, other communal establishments or sleeping rough.

The table below sets out the MINI Scores for the Electoral Wards that make up the South Sector of the Birmingham and Solihull Mental Health NHS Trust.

Table 3-7: South Sector MINI Scores

Electoral Ward	MINI Score
South PCT	
Bartley Green	104.8
Weoley	105.4
Edgbaston	113.6
Harborne	104.1
Quinton	99.1
Longbridge	105.1
Northfield	98.9
Billesley	103.7
Brandwood	103.6
Fox Hollies	108.6
Hall Green	94.1
Bournville	102.5
Kings Norton	104.7
Moseley	109.5
Selly Oak	104.5
HoB PCT	
Sparkbrook	121.4
Sparkhill	114.5

Relative to the approximate national average score of 100, only three wards in the sector, Quinton, Northfield and Hall Green, have better than average mental health. All the other wards have higher than average indicators of need for mental illness.

Notably, Sparkbrook and Sparkhill are amongst the highest scores in the city for rates of mental illness and are typical for inner cities.

3.3.7 Local Health Organisations

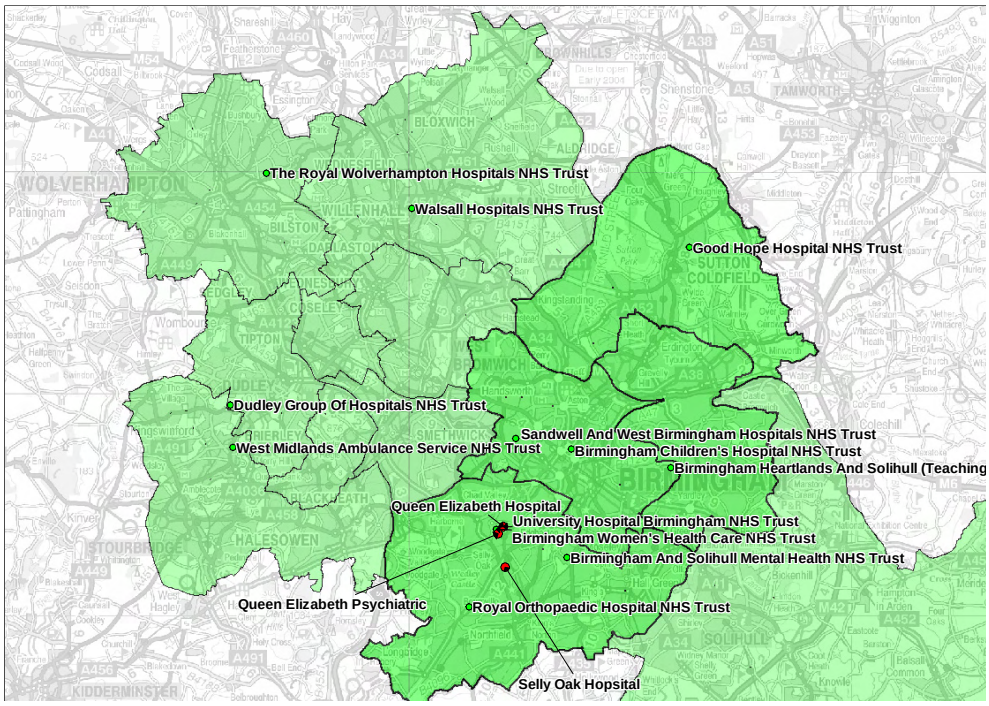
The PCTs and NHS Trusts within the Birmingham and Black Country SHA are shown in the map below.

The darker shaded area shows the PCTs in Birmingham. In addition to 12 Primary Care Trusts which commission services and provide primary, community and a range of specialist services, the SHA also hosts:

- 10 NHS Trusts which provide acute hospital care (including the specialist Trusts Birmingham Childrens' Hospital NHS Trust, Birmingham Women's Healthcare NHS Trust and the Royal Orthopaedic Hospital NHS Trust).
- An Ambulance Trust (West Midlands Ambulance Service) which provides emergency response and other services for our area and beyond.
- One Mental Health Trust covering Birmingham and Solihull and a Care Trust (incorporating social care) in Sandwell. Mental Health services in Walsall, Wolverhampton and Dudley are provided by the Primary Care Trusts.

The nearest acute Trust to the south is in Worcester, some 26 miles away.

Figure 3-2: BBCSHA Health Organisation Map



3.3.8 Urban Regeneration

South West Birmingham is undergoing significant suburban regeneration. The area already has a wide range of commercial activity; Major employers in the area include MG Rover/Powertrain, Birmingham University, University Hospital, Selly Oak Colleges, Woodgate Business Park, Kings Norton Business Centre, Birmingham Great Park and Cadbury's. However, there is an identified need to realise a wide range of development opportunities in the locality.

Specifically, the Acute Trust's current hospital sites sit in an area of major planned change which will see the development of an A38 High Technology Corridor through Selly Oak and Northfield.

Building on the strengths of the Aston Science Park, Aston University, Birmingham University and University Hospital as leaders in the development and adoption of new technology, the A38 High Technology Corridor will focus on nano- and micro- technologies with new sites planned at Eastside, Bristol Street, Pebble Mill, Birmingham Battery and Longbridge.

Included in the planned developments are the revitalisation of Selly Oak Shopping Centre, an improved environment with better conditions for buses, pedestrians and cyclists and improved access to development sites and along the A38 corridor.

Already significant new investment has been made in a number of local retail centres, new housing developments and improved transportation links.

3.4 Drivers for Change

3.4.1 National Health Trends

Recent work carried out by the Department of Health predicts the likely changes which will occur in healthcare provision over the next 20 years.

The expected times that these changes are likely to impact are summarised as follows:

Table 3-8: **National Health Trends**

0-5 years	In the next five years, the drivers of most significant impact are likely to be the increasing use of IT and the rise of consumerist behaviour in health care. Surgical technology will continue to make more minimally invasive surgery possible. Health care training and careers will be changing and becoming more flexible. Expert patients could dramatically increase the amount of self care, but wide access to health information over which there is no quality control could also result in seriously misinformed patients.
5-10 years	In the next five to ten years, "intelligent technologies" eg, automated analyses, medical devices that can self monitor and call upon expert/professional help automatically will play an increasing role in care. Miniaturisation of diagnostic and monitoring tools is likely to be significant, making these available in local or home settings. Professionals could be making much greater use of "intelligent devices" and expert systems software to support clinical decision making, for example. There will be increased use of "data mining" and systems that can infer "rules" based on experience of previous events.
10-15 years	In ten to fifteen years, the ageing of the workforce and population could create significant service pressures. Chronic disease will be increasing. We could see the (re-) emergence of "exotic" diseases as a result of global warming and increased population mobility. There might be a major pharmaceutical innovation in one or two disease areas.
15-20 years	In fifteen to twenty years, the pressures on the workforce may mean the idea of retirement might start to change. We could see further medical advance such as use of stem cells to regrow body parts and/or correct/repair injury.
20 years +	Twenty years from now, we might be seeing a mainstream use of generic screening, and some genetic therapies. The elderly population – those over 75 – will be starting to increase.

While it is not possible to predict with great accuracy the type of health service that will be required in 20 years time, the planned development will put UHBFT in a better position to adapt to changing trends in healthcare. The size of the new acute hospital has been set to allow increasing specialisation in hospital services while recognising that the management of many conditions will gradually migrate to the community. The new mental health facilities have been designed to allow for future flexibility through the predominance of single bedrooms and smaller local units. The Trust's links with the University put both in an ideal position to seize opportunities in technological advancement.

3.4.2 NHS Policies and Guidance

This business case is being developed at a time of major strategic change across the NHS. This change has been driven by a range of key policies developed by the Department of Health which sees increased investment supporting a significant agenda for the improvement of services.

The latest key policy document from the Department of Health is the NHS Improvement Plan published in June 2004. The NHS Improvement Plan consolidates the progress made by its predecessor, the NHS Plan, confirms the strategic direction for the NHS and sets out further developments for the second half of the decade.

Investment in the NHS will rise to £90 billion by the year 2007/8. In return for this investment the NHS will offer a range of benefits. The key government initiatives and how they have been addressed in this FBC are shown in the figure and table below:

Figure 3-3: Key National Policies 2000-2004

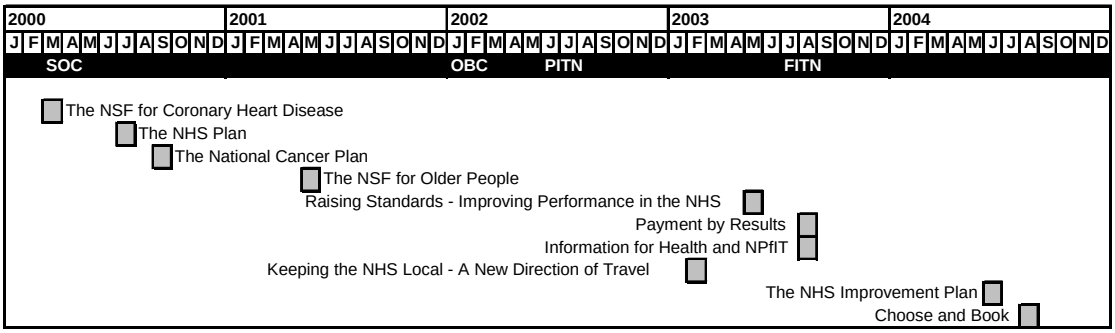


Table 3-9: FBC Response to NHS Policies and Initiatives

NHS Policy/Initiative	Key Themes	FBC Response
NHS Plan/NHS Improvement Plan	Patients will be admitted for treatment within a maximum of 18 weeks from referral by their GP, and those with urgent conditions will be treated much faster.	Planned capacity and service models are based on achieving low waiting times and fast throughput in all areas.
	All NHS Trusts will be in a position to apply for NHS Foundation Trust status.	Already achieved.
	There will be incentives for healthcare providers to offer care that is efficient, responsive, of a high standard and respects people's dignity.	The new development and service models foresee a provision of service consistent with that expected in the 21st Century.
	More staff will work in the NHS and will be encouraged to work more flexibly in a way that best responds to patients' needs.	Hospital and community based services will see significant changes in staffing over the next decade. More information is provided in Chapter 10.
	In every care setting the quality of care will continue to improve with the Healthcare Commission providing an independent assurance of standards, and patient safety being a top priority.	The introduction of new service models and a modern environment will place the Trust in the best possible position to provide services which are of transparent high quality.

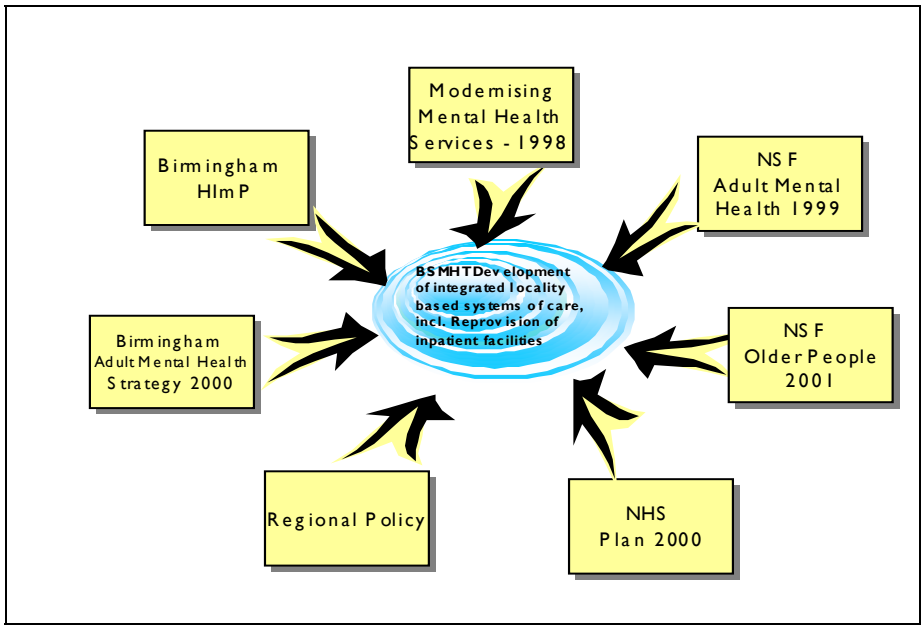
NHS Policy/Initiative	Key Themes	FBC Response
	Health services designed around the needs of the patient.	Development of new integrated service models for acute care and mental health.
	Provision of new hospitals and associated infrastructure to improve the overall quality of NHS estate.	The FBC will result in the building of a single site, modern, state of the art hospital, proving acute services and mental healthcare together with a teaching, training and research centre. Split site working will be eliminated and poor clinical adjacencies improved.
Keeping the NHS Local	Patients will have access to a wider range of services in primary care, including access to services nearer their workplace.	The FBC anticipates a transfer of work into the community equivalent to about 8% of current beds.
	Local communities will have greater influence and say over how their local services are run, with local services meeting local priorities.	The Trust has recently achieved foundation status and has attracted more members from the public to its Board and membership than any other Foundation Trust.
Coronary Heart Disease, Cancer, Older People	Further progress in tackling the biggest killer diseases, with the country on track to secure by 2010 a 40% fall from 1997 in death rates from heart disease and stroke, and a 20% fall in death rates from cancer.	The Trust is a specialist centre for both cardiac and cancer care. The FBC plans for significant developments in both areas.
	Major investment in services closer to home will ensure much better support for patients who have long-term conditions, enabling them to minimise the impact of these on their lives.	The FBC allows for investment in the community but the strategy for developing local services will be developed by the PCT over the next few years.
	Older people will receive appropriate specialist care by hospital staff who have the right set of skills to meet their needs.	The new service model for acute care will ensure that older people receive the most appropriate care in an environment most suited to their condition. The new integrated mental health service model will result in an older adult mental health facility being integrated with the existing elderly physical health service.
Payment by Results	Patients will be able to be treated at any facility that meets NHS standards, within the national maximum price that the NHS pays for the treatment they need.	Quality standards are already consistent with the best the NHS has to offer and will improve further. Future Trust income is calculated from current national tariffs.
Choose and Book	Patients will be able to choose between a range of providers, including NHS Foundation Trusts and treatment centres.	The new development will enable the Trust to be the hospital of choice for patients in south and west Birmingham and beyond.
	Electronic prescribing will improve the efficiency and quality of prescribing.	Prescribing systems in the new hospital will be state of the art.
Information for Health	Development of fully integrated IT systems to facilitate the delivery of patient care.	Provision of IT network and infrastructure through FBC. Other services to be procured separately through the National Programme for IT.

Within the series of policy direction and priorities that the Government has recently developed, there are a number that have particular significance for both UHBFT and BSMHT. These are summarised in **Appendix 3A**.

3.4.3 National Drivers for Change in Mental Health

In developing plans for the future, BSMHT has made reference to real strategic drivers for change to which attention must be focused. These drivers are summarised as follows.

Figure 3-4: Strategic Drivers for Change in Mental Health Services



The publication of the NSFs and NHS Plan has emphasised the Government's commitment to prioritising mental health services and provided the framework for developments and investment in services.

3.4.4 National Service Framework – Adult Mental Health

The shape of thinking about how the NHS cares for people who experience mental health problems has been through an unprecedented series of changes. This process of transformation began in the mid 1990s and is continuing to influence the strategy and direction of mental health care. The NHS has embarked on a transformational journey that will move us on from isolation, stigmatisation, and discrimination to one of inclusion, understanding and recovery.

In the form of the National Service Framework for mental health services, the Government published ambitious plans to improve and transform mental health services. The architecture of this new mental health strategy is underpinned by three essential foundations:

- The radical shift in the philosophy of care with the primary focus of care moving from hospital to the community; this is about tackling the stigma that many people with mental health problems experience and providing care in a way that promotes social inclusion;
- The need to fill the disturbing gaps in mental health services that exist in many parts of the country; and
- To respond more effectively to the needs of those with severe mental illness who require more intensive support.

The NSF for Mental Health sets out the national standards for mental health services for adults of working age, what they aim to achieve, how they should be developed and delivered, and how to manage performance. The seven standards cover: mental health

promotion; primary care and access to services; effective services for people with severe mental illness; support to carers; and the action necessary to achieve the target to reduce suicides.

The former Birmingham Health Authority, in its consultation document *Birmingham's Healthcare Future: A Framework for Investment (1998),* consulted on the need for a single Mental Health NHS Trust. It was highlighted that a single provider would underpin a common approach to service delivery. Specifically it would:

- Enable mental health services in the city to develop a better "interface" with other significant agencies, most notably social services, but also with the voluntary sector, employment and housing agencies;
- Facilitate a consistent approach to developing the relationship with primary care; and
- Allow city-wide approaches to serving the needs of particular communities to be developed eg, black and minority ethnic communities.

A key theme to this overall development has been to respond to mental health needs in community and primary care settings. The Trust's plans and proposed developments have been supported by PCTs and strong partnership links have been developed.

The new service provision is designed to create an enhanced seamless primary care/secondary care interface that can respond to the particular needs of each PCT locality and to move towards a more consistent, coherent and equitable pattern of mental health services across the city.

3.4.5 Development of Integrated Mental Health Services for Older Adults in Birmingham

BSMHT's current model of care is based on the NSF for Older People and the Birmingham Joint Working Group for Older People Report and progress against the eight standards is given in Table 3-10 below. The Birmingham PCTs have promoted a cross-city review of services which is an ongoing initiative.

Table 3-10: Current Progress against Older People NSF

NSF Standard For Older People	Current Progress
Standard 1: Rooting out age discrimination NHS Services will be provided, regardless of age on the basis of the clinical need alone.	The Trust has carried out an audit of all relevant policies and amended those necessary to ensure they are not age discriminatory.
Standard 2: Person Centred Care NHS and Social Care treat older people as individuals and enable them to make choices about their own care. This is achieved by the single assessment process, integrated commissioning arrangements and integrated provision of services, including community equipment and continence services.	Older Adult Community Services continue to work in partnership with other agencies to achieve the implementation of the single assessment process. Dementia Care Mapping (DCM) is already established within our in-patient services and this process is rooted in the individual and person centred care.
Standard 3: Intermediate Care Older people will have access to a new range of intermediate care services at home or in designated care settings, to promote their independence by providing enhanced services to enable early discharge from hospital and to prevent premature or unnecessary admission to long term residential care.	An intermediate care proposal for older people with mental health problems, based on Building Care Capacity has been prepared. The city-wide review of services is expanding on this in taking forward the service redesign.
Standard 4: General Hospital Care Older People's care in hospital is delivered through appropriate specialist care and by hospital staff who have the right set of skills to meet their needs.	The Trust has in place elements of the General Hospital Liaison service that was piloted in 2000/2001. Further initiatives are being developed in primary care and in nursing home provision.
Standard 5: Stroke The NHS will take action to prevent strokes, working with other agencies where appropriate.	Implementation of screening tool to help identify vascular dementia from Alzheimer's.

NSF Standard For Older People	Current Progress
Standard 6: Falls The NHS, working in partnership with councils, takes action to prevent falls and reducing fractures and other injuries in their population of older people. Older people who have fallen receive effective treatment and rehabilitation and with their carers, receive advice on prevention through a specialised falls service	The directorate has already established a falls group to look at risk assessment for older people at risk from falls. A screening tool for at risk older people and falls protocol has been developed.
Standard 7 : Dementia & Depression Promoting good mental health. Early recognition and management of mental health problems. Access to specialist care. Providing care for younger people with dementia. Supporting carers of older people by providing information and practical support.	A City wide early onset dementia service established. Several support groups for carers in partnership with the Alzheimer's Society, User Voice & Birmingham City Advocacy have been established. An independent advocacy and information office at the QEPH operated jointly across all services.
Standard 8: The Promotion of Life and Active Life in Older Age The health and well being of older people is promoted through a co-ordinated programme of action led by the NHS with support from councils.	Local neighbourhood day care services have been established which are integrated into the wider main stream community setting.

3.4.6 The National Institute for Mental Health in England

A significant development since the Outline Business Case was approved has been the launch of The National Institute for Mental Health in England (NIMHE) in June 2002, with the core priorities of: System transformation; Workforce development; and Changes in practice. A series of national work programmes have been established and the Trust is actively involved with NIMHE West Midlands in pursuing a number of these both in the context of the Birmingham New Hospitals Project and also modernisation across what is a new Trust. Examples of this include: Acute Inpatient Care, Anti-Stigma and Discrimination, Booking and Choice, Black and Minority Ethnic Mental Health, Older People's Mental Health and Suicide Prevention. The outcomes of these work streams will inform the transformation process towards the new models of care.

3.5 Birmingham and Black Country SHA

The Birmingham and The Black Country Strategic Health Authority published a strategic framework called "A Wider View" in September 2004. This document was the outcome of consultation with stakeholders and the public of Birmingham, Solihull and The Black Country and sets out a distinct set of priorities for health and health services in the Strategic Health Authority's area for the period 2004 to 2010.

The priorities identified are:

- **Tackling Health Inequalities**: The framework sets out a wide-ranging strategy for reducing inequalities in health.
- **Promoting Race Equality:** The framework identifies barriers to accessing services and gaining employment in the NHS for black and minority ethnic populations together with a proposed action plan.
- **Establishing A Health Start to Life**: Recognising the particularly poor rates of infant and perinatal mortality in the area, the framework proposes the development of enhanced midwifery services for at-risk populations, and new approaches to supporting mothers and babies in early life.
- **Supporting People with Long-Term Conditions**: The framework sets out evidence on the 'rising tide' of chronic and long-term conditions in the population and argues that current models of care for many people with long-term conditions are inadequate. It supports the development of individual case management services for the most

vulnerable people and a range of community-based services to support people in managing their conditions better at home.

- **Promoting Choice:** The framework acknowledges national policy on patient choice but sets out an ambition to extend choice beyond areas covered by national policy, e.g. by piloting choice in mental health services.
- **Improving Capacity and Investment Planning**: The framework lists areas of constraints in building stock, workforce and other aspects of capacity. It sets out analysis of the current use of hospital inpatient facilities and identifies ways in which matching national best practice would relieve pressure on hospital services. The framework also sets out an ambition to increase the share of total NHS expenditure which is invested in primary care services.
- **Delivering a Five Star Economy**: The framework sets out an ambition to continue the relatively good performance of the local NHS on national targets and performance measures, but to go beyond this by focusing more closely on measuring and responding to the views of patients, the public and the NHS workforce.

Although much of the planning for this scheme pre-dated the publication of the SHA Strategic Framework, the plans set out in the FBC match the analysis and strategy set out in "A Wider View" in a number of important respects:

- The Trusts' plans will deliver models of care which see a greater proportion of care delivered in the community.
- The proposed developments will support the Trusts in exceeding national waiting time targets and other key performance measures in line with the SHA's "Five star health economy" theme.
- At just under £96m, the project tackles one of the biggest 'backlog maintenance' problems currently facing the SHA.
- The Trusts' contribution to the major urban regeneration project for the A38 High Technology Corridor is in line with the emphasis placed on regeneration and local employment set out in the SHA document.
- The mental health scheme supports the new models of care set out in the Mental Health and Older People's NSF and supports delivery of an enhanced seamless primary care/secondary care interface that can respond to the particular needs of each PCT locality.
- The proposals are based on our assessment of best practice, efficiencies and new models of care (eg for Long Term Conditions) that can deliver a real dividend in terms of reduced bed occupancy and ability to accommodate further developments in line with the analysis set out in A Wider View.

3.6 South Birmingham PCT

3.6.1 PCT Overview

South Birmingham PCT (SBPCT) is one of the largest PCTs in the country. The PCT covers the four parliamentary constituencies of Edgbaston, Selly Oak, Hall Green and Northfield as shown in the map below:

Figure 3-5: South Birmingham PCT

The PCT commissions services for a population of 383,000 and has a budget of over £390 million for securing health services for the local population. There is also a budget of approximately £112 million for directly provided services.

The PCT provides a range of primary care services for the local population and accommodates 65 GP practices, 70 general dental practitioners, 85 local pharmacists, and 51 local opticians.

As well as general health services, SBPCT also provides a range of specialist services. These include:

- Services for chronically sick and disabled children
- Services for older people, including elderly care community hospitals
- Teaching and care at the dental hospital in Birmingham
- Services for people requiring rehabilitation via the West Midlands Rehabilitation Centre
- Specialist health care and social care homes for people with learning disabilities

SBPCT spends around £87 million annually with the University Hospitals, Birmingham, representing one third of the acute Trust's annual budget.

Table 3-11: SBPCT Spend by Provider	
Provider Trust	**Annual Spend £m**
University Hospitals Birmingham	87
Birmingham Heartlands & Solihull	15
Sandwell & West Birmingham	8
Birmingham and Solihull Mental Health Trust	36

SBPCT has recognised that for BSMHT, the New Hospitals Project is more than the re-provision of the existing QEPH. In order to deliver the new 'whole system' model of care for adult services, with the integration of community and inpatient services, it has been necessary to increase capacity in the scope community services. With this increased revenue commitment the Trust now has in place Assertive Outreach, Home Treatment, Crisis Resolution/Respite Care and Primary Care Teams covering the south sector.

3.6.2 SBPCT and the New Hospitals Project

SBPCT and its predecessor organisations (ie the PCGs and Birmingham Health Authority) have continuously supported the New Hospitals Project through its various stages of development; the PCGs and HA formally signed off the OBC in March 2002.

Being the largest contributor to both UHBFT & BSMHT - and the host PCT - SBPCT recognises its position as a key stakeholder in the development and has previously formally committed additional revenue funding of £22m over the next five years to pay for the development.

Since its inception, SBPCT has received the lowest possible level of growth due to being marginally over its weighted allocation target. For 2005/6, the PCT will receive 8.55% which is just over 3% more than the recognised inflation uplift of 5.3%. Some neighbouring PCTs will receive higher levels of growth due to being below their weighted capitation target.

However, the introduction of Waiting, Booking and Choice, and Payment by Results has added a significant degree of uncertainty to the PCTs commissioning plans. While the PCT cannot sign up to unlimited funds, the Choice and Payment by Results agendas could potentially result in more activity transferring to the new hospitals and previous financial projections are therefore no longer appropriate. In principle, the PCT is supportive of UHB being the patients' hospital of choice within the limitations of available funding.

The OBC was signed off on virtually no growth in general acute services. In effect this means that significant funding increases (above growth) to meet additional activity at UHB would need to be off-set by reductions at other Trusts. The PCT does not have a specific strategy for transferring activity between providers but if patients choose to have their care at UHBFT this would be in keeping with the PCT's desire for patients to be able to access high quality local services.

However, prevailing activity trends have brought into focus a number of additional challenges which the PCT will need to address in the near future.

- **Rising emergency admissions**: In common with all PCTs nationally, SBPCT have to meet the target to reduce non-elective bed-days by 5% below the 2003/4 baseline over the next three years. Over the last three years, non-elective admissions to UHBFT have risen at an annual rate of around 9%. This appears to have slowed to 4.5% in 2004/5. Though bed days have not increased by the same amount, if emergencies continue to rise this will present an even greater challenge.
- **Chronic disease**: SBPCT has a significant burden of disease and a rising prevalence of chronic illness. The PCT estimates that around 80% of GP consultations relate to

chronic disease and these patients are more likely both to require unplanned hospital admissions and to use more bed-days when they do, exacerbating the problem outlined above.

The PCT has a number of initiatives to meet these challenges including:

- Case management in primary care to manage repeat admissions to hospital
- Development of pathways between primary and secondary care clinicians in key clinical areas
- The development of an Unscheduled Care Centre to offer a real alternative to patients who would otherwise attend A&E whether in or out of hours.
- Longer term development of a self care programme
- Explore the potential for community based diagnostics
- Provide IV antibiotics in the community
- Launch a targeted information campaign to advise communities on the best place to "Get the Right Treatment"
- Developing new ambulance protocols

All of these developments form part of a wider strategy for developing community and intermediate care services. This strategy has now been outlined in the PCT's Local Development Plan which sets out the planned developments over the next three years. Though the planning horizon of the LDP is earlier than the opening of the new hospital, the proposed strategies are entirely consistent with the plans stated above and the wider FBC.

The OBC allowed for a significant increase in intermediate care with the equivalent of 60 beds transferring into a community setting. Over the next few years it will be important to integrate the PCT plans for the development of these services with the wider agenda for avoiding emergency admissions and managing chronic disease to produce a single coherent strategy.

3.7 Current Services - Acute

Services within UHBFT are currently provided on two sites - Selly Oak Hospital (SOH) and the Queen Elizabeth Hospital (QEH), which are located 1½ miles apart separated by the A38, Bristol Road.

SOH is the equivalent of a District General Hospital, with Accident & Emergency, trauma, general medical and surgical services, outpatient and day case facilities.

QEH, in comparison, is the Trust's host site for specialist services. The majority of the Trust's regional and supra-regional services are provided from QEH, with its important geographical proximity to the University of Birmingham's Medical School.

Interventional and diagnostic imaging and the majority of laboratory facilities are based there. A greater proportion of the casemix at the QEH is elective as compared to SOH, which has a greater proportion of emergency admissions.

The configuration of clinical, teaching, and support services as currently provided across the two sites is shown in Table 3-12 overleaf.

Table 3-12: Disposition of UHB Services		
Specialty	**QEH**	**SOH**
Clinical Services		
Accident and Emergency		✓
Acute Medicine		✓
Breast Services	✓	✓
Burns and Plastic Surgery		✓
Cardiology	✓	✓
Care of the Elderly	✓	✓
Day Case Surgery		✓
Dermatology		✓
Ear, Nose & Throat Services	✓	✓
General Surgery	✓	✓
Haematology	✓	
HIV Services		✓
Critical Care	✓	✓
Liver Services	✓	
Maxillofacial Surgery	✓	✓
Neurosciences	✓	✓
Oncology	✓	
Ophthalmology		✓
Outpatient Services	✓	✓
Pharmacy Services	✓	✓
Renal Services	✓	
Rheumatology		✓
Trauma		✓
Urology	✓	
Clinical Support Services		
Bereavement Services	✓	✓
Imaging Services	✓	✓
Laboratory Services	✓	✓
Operating Theatres	✓	✓
Postgraduate Teaching Facilities	✓	✓
Sterile Services Facility	✓	✓
Therapy Services	✓	✓
Undergraduate Teaching Facilities	✓	✓
Non Clinical Services		
Catering Services	✓	✓
Estates Management	✓	✓
Hotel Services	✓	✓
Management & Administration	✓	✓

3.7.1 Teaching and Research

As the West Midlands Region's principal teaching hospital, the Trust delivers traditional district hospital services to a local population of well over 450,000 people and offers specialist medical expertise such as advanced neurosurgery, organ transplant and major cancer services on a national basis. This is supported by extensive research, development and training programmes involving close collaboration with the University of Birmingham's renowned Medical School. There are links with other universities, including Universities of Central England, Aston and others.

The Trust works in partnership with its academic partners to promote multi-disciplinary research, there is particular emphasis on clinical and translational research, in those designated areas which include cancer, cardiovascular science, inflammation, infection and transplantation and mechanisms of disease. The Trust is the biggest provider of NHS R&D in the West Midlands.

3.7.2 Shared Services

The Trust hosts a range of shared services including shared services with Birmingham Women's Healthcare NHS Trust (BWHCT), where UHBFT manages on behalf of BWHCT:

- Information Technology services,
- Facilities (catering, portering, security, capital and estate management, domestics, telecommunications, linen, Health & Safety, and fire),
- Human Resources, with a small team retained at BWHCT, and
- Finance (Payroll, Purchase Ledger, etc.) with Management Accounts and Director of Finance retained at BWHCT.

When the new acute hospital is operational, it has been agreed that all the shared services will continue with the exception of facilities and estates; there is currently no plan for a relationship between Consort and BWHCT.

The Trust also provides Occupational Health services to a number of neighbouring Trusts through existing Service Level Agreements.

The Trust is also involved in a number of collaboration projects with neighbouring organisations including:

- Waiting, booking and choice initiatives
- Cancer Service Implementation Project
- Detailed scoping with Birmingham Children's Hospital NHS Trust to investigate how the concept of shared services can be developed between the two organisations in the service areas of Pharmacy, Finance and Procurement.

3.7.3 UHB Catchment Population

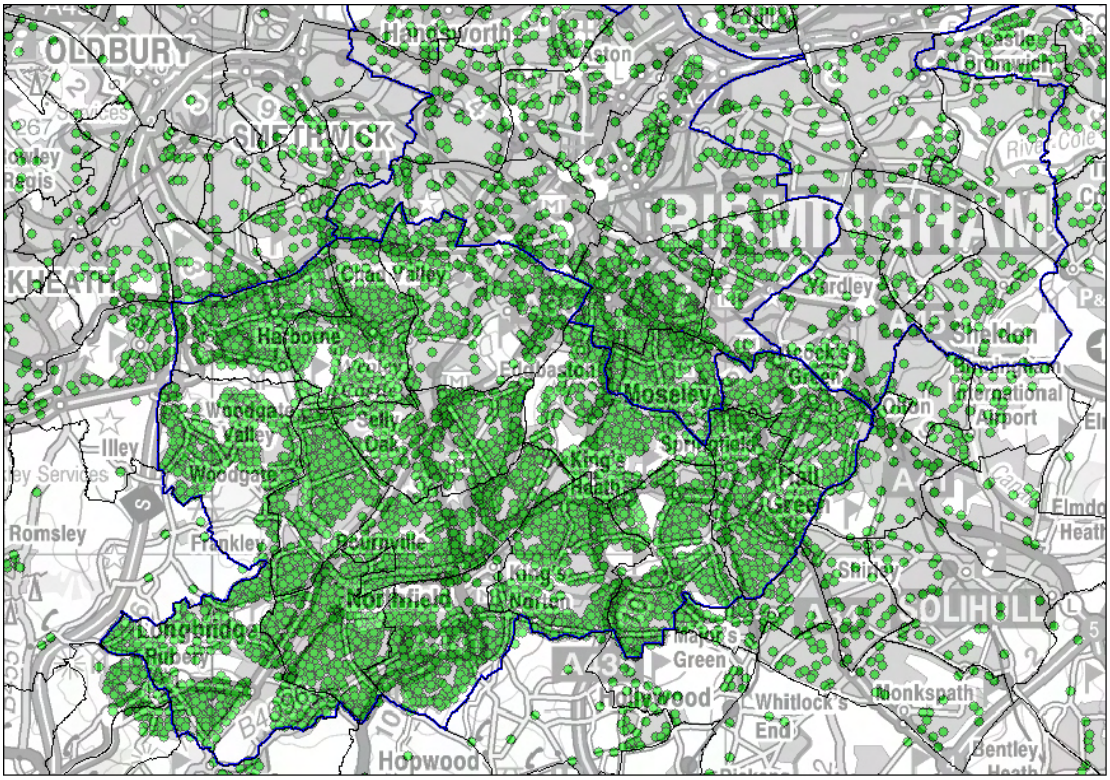
The Trust's triple roles in providing local, regional and national services enables the residents of South Birmingham to enjoy direct local access to an extensive range of high quality clinical investigations and treatments, as summarised in the table below:

Table 3-13: UHB Catchment Populations

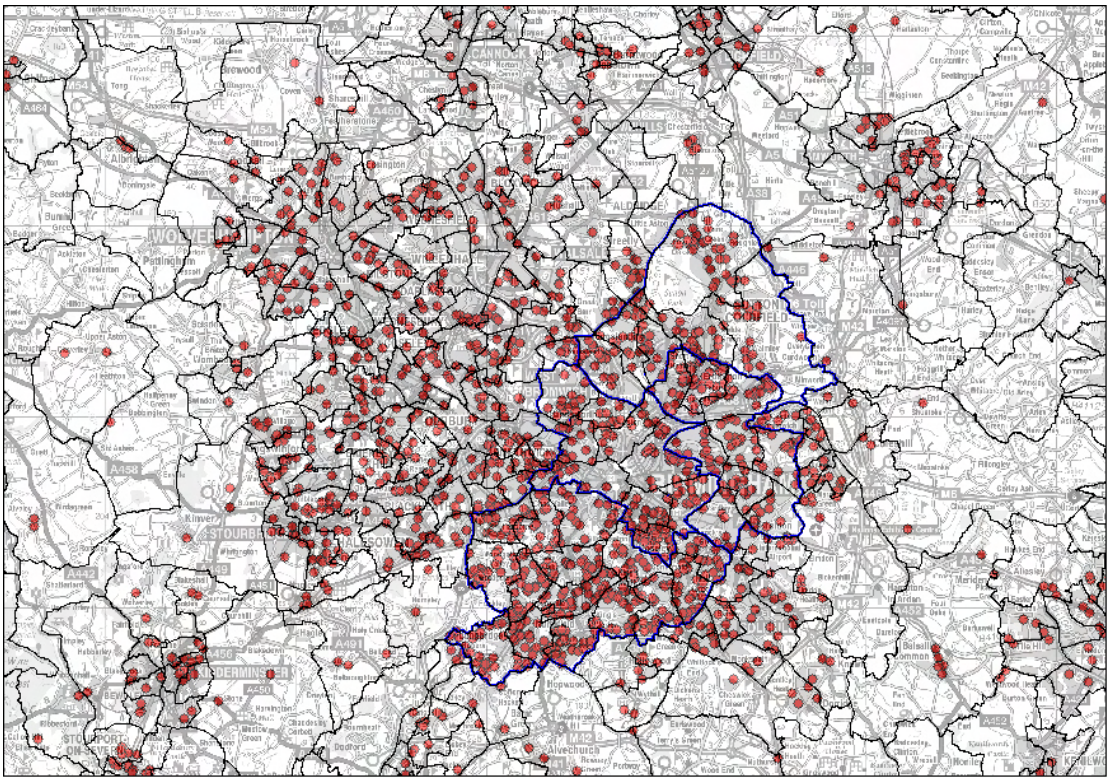
Service Profile	Estimated Catchment
District hospital services, catering for the vast majority of everyday acute health needs among the adult population of South and Central Birmingham	410,000
Regional services, such as advanced renal, cancer and neurological care, burns and cardiac services - available to the West Midlands population	2.3 million
Supra-regional services, including liver and heart transplant programmes, for patients throughout the UK	4.1 million

The geographical catchments for both local and specialist services are shown overleaf.

Figure 3-6: UHB Catchment Populations



UHB draws from a wide population which includes most parts of the UK. However, for DGH services, activity tends to be concentrated on SBPCT and part of HoBPCT as shown above. The map below shows that more specialist services have a core catchment coterminous with the SHA boundary.



3.7.4 Current Activity

GP referrals to consultants at UHBFT have remained broadly stable over the past four years, but the Trust has experienced an increase in excess of 4% per annum for tertiary referrals.

Table 3-14: Current growth in OP activity by main category					
	00/01	01/02	02/03	03/04	Avg % Increase
New Outpatients	95,387	100,278	103,073	110,062	5%
Review Outpatients	273,179	287,631	295,007	301,832	3%
Total Outpatients	368,566	387,909	398,080	411,894	4%

The most significant referral growth has been in the following areas:

- Hand trauma following the introduction of a new model of care
- Haematology, largely attributable to the development of Haemato-oncology services and an 18% rise in referrals
- Plastic Surgery, as a result of the transfer of services from Dudley Group of Hospitals in April 2001
- Cardiology, both routine and specialist
- Transplant programmes
- Neurosurgery
- Liver Medicine and Surgery, due to increases in referrals
- Chronic Pain

By comparison, the recent trend in admissions, over the last three years, is shown in the table below:

Table 3-15: Trend in Admissions			
	01/02	02/03	03/04
Emergency	30,259	31,629	34,686
Elective	16,495	17,574	18,300
Day Case	21,231	22,471	23,194
Total	**67,985**	**71,674**	**76,180**

The table demonstrates that activity in all three admission categories continues to be on the increase and that year-to-year variations can be quite significant.

For example, the 2003/4 baseline year saw a significant increase in the level of emergency admissions. This was characterised by an 18% increase in admissions through A&E being partially counter-balanced by a 9% reduction in admissions by GPs and the bed bureau. Had this increase set an overall trend for the future then there would be the potential for significant pressure on beds in the next decade. However, two factors need to be taken into consideration:

- The increase in emergency admissions has not seen a corresponding increase in non-elective bed days; the average length of stay for emergencies has fallen by approximately 14% over the last three years.

- Year to date figures for 2004/5 suggest that emergency admissions are continuing to rise but the rate of increase has slowed to around 4.5%.

At the end of the last decade elective inpatients saw a steady reduction as inpatient work converted to day cases. This trend has now reversed and elective inpatient work has followed a rising trend over the last four years. The rise in day cases has appeared to slow. Although the elective workload has dropped slightly below the trend based on year to date figures for 2004/5 there is no reason at this time to suggest that adjustments to the long term projection need to be made. It is believed that the increasing proportion of tertiary work may explain this apparent trend.

3.7.5 Current Patient Flows

During 2003/4 the Trust received activity from almost every PCT in the country. However, a little over 80% of all bed days were consumed by just 10 local PCTs. The breakdown of bed days is shown in the table below:

Table 3-16: Current Patient Flows – Breakdown of bed days by PCT

PCT	NAME	Elective OBDs	Non-Elective OBDs	Total OBDs	% of OBDs
5M1	South Birmingham PCT	24527	153238	177765	50.0%
5MX	Heart Of Birmingham Teaching PCT	6291	29309	35600	10.0%
5MY	Eastern Birmingham PCT	4769	10239	15008	4.2%
5MR	Redditch And Bromsgrove PCT	3495	7747	11242	3.2%
5D1	Solihull PCT	3457	7206	10663	3.0%
5MW	North Birmingham PCT	4276	5381	9657	2.7%
5MT	South Worcestershire PCT	3193	5791	8984	2.5%
5MG	Oldbury And Smethwick PCT	1882	6133	8015	2.3%
5HT	Dudley South PCT	2353	4427	6780	1.9%
5M3	Walsall Teaching PCT	3027	3445	6472	1.8%
	Other	28957	36741	65698	18.5%
	Total	**86227**	**269657**	**355884**	

There is a difference in the profile of patient flows for non-elective and elective work. For non-elective admissions, 57% of the work originates from South Birmingham PCT, 11% from Heart of Birmingham Teaching PCT and with no other PCT representing more than 4% of the workload.

By contrast South Birmingham PCT only represents 28% of elective bed days and the catchment is much wider; 80% of elective workload is drawn from 16 PCTs in recognition of the specialist tertiary activity contained within these flows.

3.7.6 Waiting Times

The year end waiting list numbers for the last three years are as in Table 3-17 below:

Table 3-17: Year end waiting list for the last four years

		00/01	01/02	02/03	03/04
IP/DC list	0-8 mths	3,860	4,278	4,169	3,735
	9+ mths	601	444	130	0
	Total	4,461	4,722	4,299	3,735
New OP list	0-12 wks	6,151	6,482	5,739	7,179
	13+ wks	291	0	0	0
	Total	6,442	6,482	5,739	7,179

This demonstrates a significant reduction in ‘long-waiters’ achieved by the Trust during the period, in both inpatient/day case and outpatient waiting categories.

The Trust has a good record in managing waiting times and waiting lists. Currently:

- More than 85% of patients have their elective surgery within six months of being placed on the waiting list
- All new outpatients are seen within 13 weeks of referral
- The Trust has achieved the maximum two week waiting time target from the time the GP decides to refer to an outpatient consultation for all patients suspected of having cancer

3.7.7 Performance

In July 2004 the Trust was again awarded three stars in the NHS Performance Rankings. All of nine key targets were met:

- 9/12 month inpatient waits
- 21 week outpatient waits
- 12 hour trolley waits
- Two week cancer waits
- Outpatient and Elective (inpatient and daycase) booking
- Improving working lives
- Hospital cleanliness
- Financial management

The Trust was in the top performing band of Trusts nationally for clinical negligence, total inpatient waits, 13 week outpatient waits, cancelled operations not admitted within a month, and heart operation waits. It was acknowledged that the Trust has some of the best waiting times in the country.

UHBFT has met all of its financial requirements, including attaining an income and expenditure balance, since its establishment in April 1995.

3.7.8 Current Facilities

In 1993, South Birmingham Acute Unit (as UHBFT was called prior to its Establishment as a Trust in 1995) operated services from 6 sites. As a result of a series of rationalisations and relocations only the Queen Elizabeth and Selly Oak Hospitals remain.

Key facts associated with the two remaining sites are shown in the following table:

Table 3-18: Summary of Current Estate

	QEH	SOH	UHBFT Total
Location	Edgbaston, adjacent to Medical School	Selly Oak	Split across two sites
Year of initial construction	1938 (67 years old)	1897 (108 years old)	75% before WW2.
Shares site with	BWHCT BSMHT National Blood Service Medical School	N/A	
Site size	20 hectares (50 acres)	18 hectares (43 acres)	38 hectares (93 acres)

Table 3-18: Summary of Current Estate

	QEH	SOH	UHBFT Total
Building area (m^2)	68,000	70,000	138,000
Tenure	Leasehold (999 years from 1933)	Freehold	
£ to refurbish to Category B	£43 million	£52 million	£95 million
Condition	74% below standard	65% not fit for purpose	
Particular problems	Asbestos and Aspergillus.	Spread over an extended area: lack of clinical synergy.	Inflexible to changes in use and modern needs.

Reference to condition appraisals confirm that UHBFT currently provides its services from old, worn-out buildings, which were not designed for the practice of modern healthcare – although there has been significant investment and performance in Health & Safety and Fire Safety.

More detail on the condition of the estate is provided in Chapter 4.

3.8 Current Services - Mental Health

3.8.1 BSMHT Southern Sector Service Profile

The Southern Sector provides a wide range of local, regional and supra-regional mental health services from the QEPH and an additional 40 plus sites across the south of the city ranging in size and complexity from Reaside Clinic, a 96 bed Medium Secure Unit in Longbridge to the Spring Road Centre in Hall Green.

All services are underpinned by the research and development department, which works jointly with the Universities of Birmingham and Central England, and other academic and clinical institutions.

3.8.2 Queen Elizabeth Psychiatric Hospital

The Queen Elizabeth Psychiatric Hospital (QEPH) is the principal campus for acute in-patient and associated day services for Adult, Older Adult and Regional Specialist services. The QEPH also provides a range of supporting clinical and non-clinical services:

Table 3-19: BSMHT Current QEPH Inpatient service

Service		Beds 2004
Adult	Acute Admission	90
	Intensive care	10
Older Adult	Functional	42
	Organic	21
Specialist		34
Deaf Service		12
Eating Disorders		10
Mother & Baby		8
Neuropsychiatry		4
		197

3.8.3 Community Services

Community services for both the adult and older people services are provided locally in each of the Trust's three geographic localities in the South Sector:

- Locality 1 (Heart of Birmingham PCT): Sparkbrook, Sparkhill.
- Locality 2 (South PCT): Quinton, Edgbaston, Harborne, Northfield, Bartley Green, Weoley, Longbridge.
- Locality 3 (South PCT): Hall Green, Fox Hollies, Kings Norton, Selly Oak, Moseley, Bournville, Brandwood, Billesley.

3.8.4 Adult Services (Hospital, Residential, Community).

The adult hospital and community services are managed geographically in the three localities, with the following components:

Table 3-20: Summary of Adult Mental Health Services

Service	Description
Hospital Provision	The QEPH provides 90 general adult acute beds and 10 intensive care beds. These in-patient services are essential for the treatment of people with the most acute needs in acute crisis who either cannot be supported at home and/or require the resources of an in-patient unit to meet their needs.
Residential Provision	In addition to the acute in-patient services provided from the QEPH, the Trust also provides 49 intensively staffed residential care for people with enduring mental health problems, who require longer-term rehabilitation in a residential setting.
Community Provision	These are geographically organised within nine local community mental health teams working from eight mental health resource centres. These teams/ centres are the first port of call, provide assessment, treatment plans and then facilitate access to services and a range of treatment care programmes. In addition, the majority of centres provide day services and outpatient services on site.

3.8.5 Services for Older People

Older people's services have the following components:

Table 3-21: Summary of Services for Older People

Service	Description
Hospital Provision	The QEPH provides 63 (42 functional, 21 organic) older people beds. These inpatient services are essentially for assessment with 2 wards for people with functional disorders and one ward for older people with dementia.
Residential Provision	Respite Care (30 beds) – support to carers is provided by ensuring that Users can be cared for within one of three respite community units, to ease the workload for the Carer, many of whom care for their spouse and are themselves elderly and infirm and have health difficulties. Continuing Care (63 beds) – long-term support is provided for those patients who either suffer from dementia and/or whose mental health needs a longer period of support and who have spent much of their lives in institutional care.
Community Provision	Geographically organised, there are two specialist older adult community teams (based within residential settings), which are closely linked to day services, respite care and a range of in-patient services. These services are GP practice aligned.

3.8.6 Regional Specialty Services

Specialty Services are summarised below:

Table 3-22: Summary of Regional Specialty Services

Service	Description
Services for Deaf People	The service for deaf people is one of only three specialist services of its type in the country. The service is based on the four-tier model recommended by the Health Advisory Service (HAS). This service is based at Denmark House, a purpose built 12-bedded unit on the QEPH site. It provides in-patient treatment, day care and community based care for adults of any age who have mental health problems and additional hearing disabilities
Eating Disorders	The Eating Disorder Service has a catchment area that covers the whole of the West Midlands. The service provides psychological intervention, integrated with re-nourishment and physical health care. There are 10 in-patient beds and 5-day places and a range of outpatient clinics in host districts.
Mother and Baby Service	The Mother and Baby Service offers in-patient, day patient and community treatment facilities for mothers who are experiencing mental health problems associated with pregnancy and childbearing. It is based in a purpose-built unit in the QEPH. The service can offer in-patient care for up to eight mothers and their infants, with a self contained flat, which is used to assess mothers and their families prior to discharge.
Neuro-psychiatry Service	This service called "Birmingham Brainwave" provides physical/psychological assessment and holistic management of people with epilepsy or other seizure disorders, and certain types of sleep disorder. The service has recently been assessed and accredited by the National Epilepsy Task Force as providing a "Gold Standard" service and is one of only three epilepsy units in the UK to be awarded a "triple A" rating. There is no other comparable service within the region.
Psychological Therapies	BSMHT has a wide spectrum of psychological therapies ranging from Psychodynamic Psychotherapy and Brief Solution therapy to Art Therapy. The tertiary element of this service is based in Devon House (situated in the QEPH). The Trust also has a specialist Women's Counselling and Therapy service based at Uffculme in Moseley. The Trust is currently developing a new framework for delivering its 'rich mosaic' of psychological services based on review and recommendations by Professor Glenys Parry, University of Sheffield.

3.8.7 Prevailing Activity and Performance Levels

The tables below demonstrate the Trust's six year trends in terms of occupied bed days and average length of stay (ALOS):

Table 3-23: QEPH Occupied Bed Days

Service	99/00	00/01	01/02	02/03	03/04	04/05 Projected
Deaf Service	3,126	3,728	3,645	3,462	3,937	3,631
Eating Disorders	2,348	2,662	2,499	2,407	2,491	2,609
Mother & Baby	3,250	3,294	3,327	3,272	3,160	3,154
Older Adults	19,017	20,145	20,133	19,710	20,078	19,202
Adult Psychiatry	38,501	38,411	39,347	38,646	39,693	40,438
Intensive Care	3,328	3,359	3,020	2,908	3,141	3,362
Total OBDs	**69,570**	**71,599**	**71,771**	**70,405**	**72,500**	**72,395**

Table 3-24: ALOS for QEPH Discharges						
Service	**99/00**	**00/01**	**01/02**	**02/03**	**03/04**	**04/05 Projected**
Deaf	86.00	79.70	65.53	104.18	72.67	49.13
Eating Disorders	121.05	113.08	114.62	120.96	98.32	135.25
Mother & Baby	48.46	72.70	59.81	48.44	77.61	89.95
Older Adult	52.84	57.43	61.33	64.14	67.23	58.10
Adult	51.30	44.58	52.87	40.61	54.10	55.48
Intensive Care	88.09*	31.85	39.64	29.31	42.32	78.08

** This is skewed by one individual patient who had an unusually long length of sta.*

Table 3-25: Finished Consultant Episodes for QEPH						
	99/00	**00/01**	**01/02**	**02/03**	**03/04**	**04/05 Projected**
Deaf Service	42	37	45	40	36	26
Eating Disorders	22	24	21	24	22	21
Mother & Baby	57	46	57	64	44	36
Older Adult	327	334	291	283	286	267
Adult Psychiatry	926	898	865	893	791	696
PICU	34	20	28	16	28	21

Table 3-26: QEPH Bed Utilisation							
Service	**Available Beds**	**99/00**	**00/01**	**01/02**	**02/03**	**03/04**	**04/05 Proj**
Adult Acute	90	105	106	108	106	108	110
- Occupancy		117%	118%	121%	117%	120%	123%
PICU	10	9	9	8	8	9	9
- Occupancy		90%	90%	90%	80%	86%	92%
Older Adult	63	52	55	55	54	54	52
- Occupancy		83%	87%	90%	86%	87%	84%
Specialty	34	25	27	26	25	26	26
- Occupancy		74%	79%	77%	74%	77%	76%
Total	**197**	**191**	**197**	**197**	**193**	**197**	**197**

Occupancy levels for the adult service (based on 90 beds) have been able to exceed 100% by use of 'leave' and 'other beds' within the service. This means that when current in-patients are given 'leave' and go home for short trial periods of time as part of their care, new patients are admitted into their beds. Alternatively, new adult patients are admitted to beds in other parts of the service ('outliers'), usually our specialist service, which is able to maintain lower occupancy levels.

An analysis of OBDs excluding 'Leave' during the period 2001/02 and the projected 2004/05 demonstrates occupancy levels of between 82% and 86%.

Intensive Care, Older Adult and Specialty services have bed usage of approximately 80% - 90% occupancy.

3.8.8 Current Facilities

Whilst the Trust operates and delivers services from more than 100 properties across the city, key facts associated with the existing QEPH are shown in the table below:

Table 3-27: Key Facts Associated with Existing QEPH	
Location	QEMC Campus, Edgbaston
Year of Construction	1989/90
Shares site with	BWHCT UHBFT National Blood Service Medical School
Building area (m^2)	13,400
Tenure	Leasehold
Particular problems	Severe shortage of day and activity space; ward sizes and design make it difficult to nurse; inflexible and unable to deliver modern standards (Privacy and dignity, gender separation and DDA)

More detail on the condition of the QEPH is provided in Chapter 4.

THE NEED FOR INVESTMENT

4.1 Summary

In this chapter the local themes and catalysts for change are examined, separately identifying the issues challenging each of the Trusts (ie, acute and mental health) before exploring the future service models to be implemented to meet these challenges which require the supporting capital developments. The structure of this chapter is shown in the figure below:

Figure 4-1: The Need for Investment

	Case for Change	Future Service Model
Acute	Section 4.2 **Appendix 4A**	Section 4.3 **Appendix 4B**
Mental Health	Section 4.4 and 4.5 **Appendix 4C and 4D**	Section 4.6 **Appendix 4E**

4.2 Case for Change - Acute

The case for change for acute services was set out extensively in the Outline Business Case, a précis of which is provided at **Appendix 4A**.

The Case for Change has a number of strategic drivers, namely:

- The need to improve **services** to ensure they are patient focussed and meet the rising expectations of the public.
- The need to develop **human resources** to ensure that both the number and roles of future staff are appropriate to deliver to future healthcare agenda.
- The need to reconfigure the **estate** to optimise clinical adjacencies and ensure that future services are provided from facilities appropriate to 21st century healthcare.
- The need to develop **information management and technology** systems to support future service delivery in line with the NHS strategy for IM&T development.

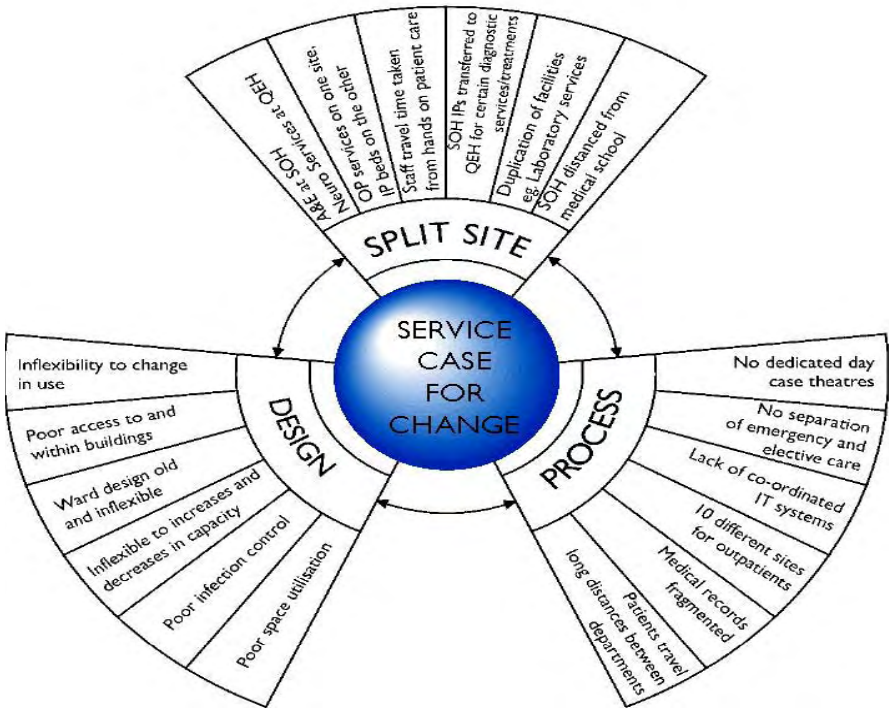
4.2.1 Service Drivers

The need to develop services is by far the most important element of the case for change.

The Trust's problems are far-reaching and complex, and have been the subject of ongoing and extensive reviews for the last 10 years.

A summary of the key features of the service case for change is given in Figure 4.2 below:

Figure 4-2: The Service Case for Change



Key to the initiative to develop a new hospital was the need to bring services together to improve clinical (and academic) adjacencies, use space more efficiently and flexibly, and to create an environment consistent with the standard of healthcare delivery expected in the 21st century. The service drivers are discussed in more detail in **Appendix 4A**.

4.2.2 Human Resources Factors

The key human resource issues are summarised as follows:

- Following the rationalisation of hospital services across the city, cultural differences still exist in both current hospitals, partly associated with their largely differing activity bases (SOH largely DGH services and QEH principally a specialist centre), making it difficult to develop a cohesive workforce.
- Staff facilities are poor and often inaccessible.
- High quality staff are not attracted to working in a poor environment.

4.2.3 Estates Factors

The Trust has a total backlog maintenance commitment of £95.71m, based on the latest update to the condition survey conducted in October 2004. Previous analysis has shown that a capital spend of circa £13m per annum over seven years only brought a real benefit of £7.6m in terms of backlog reduction.

The results of the latest condition survey are presented overleaf and highlights that:

- Only 49% of the Estate has appropriate functional suitability
- 7.6% is impossible to improve
- Circa 80% of the Estate has adequate space utilisation. Almost 20% is either grossly overcrowded or underused

- Only 26% of the Estate has adequate or better physical condition, with around 4% at risk of imminent breakdown
- Almost 75% of buildings are over 25 years old, with a large component dating from before the second world war
- The majority of wards follow the Nightingale design. The requirement for single sex accommodation has only been achieved using screens that do not provide complete visual privacy and offer only limited sound attenuation

Table 4-1: UHBT Estate Condition Survey (Capita 2004)

	QEH%	SOH %	UHBT Total %
Physical Condition			
A (as new)	8.9	0.1	4.7
B (adequate)	12.7	31.3	21.5
C (major change needed)	62.6	58.9	60.8
Cx (uneconomic)	13.8	1.6	7.9
D (imminent breakdown)	1.6	6.0	3.7
Dx (replacement needed)	0.3	2.0	1
Functional Suitability			
A (ideal)	13.6	6.8	10.3
B (adequate)	41.4	36.5	39.1
C (tolerable)	23.5	35.3	29.1
D (major change)	17.5	9.9	13.9
Dx (replacement needed)	3.8	9.8	6.6
Space Utilisation			
1 (empty)	1.8	0.1	1.0
2 (underused)	20.5	4.5	12.9
3 (adequate)	74.5	87.19	80.5
4 (overcrowded)	3	8.1	5.4

4.2.4 Information Management and Technology

The OBC set out the compulsive case of need for extensive investment in IM&T; this is reproduced at **Appendix 4A**. It was decided after OBC that infrastructure and network services should be procured through the main build PFI but all other services (EPR/PACS) should be the subject of a separate procurement. These are now part of the National Programme for IT and are not part of this FBC.

The Trust's plans for developing IM&T services are compatible with the NHS ICT strategy and discussed more fully in Chapter 11.

4.3 The Future Model of Care - Acute

The model of care developed for the OBC is now a key part of UHBFT's strategic direction, underpinned by the needs to respond to national, regional and local strategic drivers and to provide a modern, safe and clinically effective patient pathway from high quality buildings supported by robust information systems.

The Trust's central aim is to provide the highest quality, patient focused care in partnership with the RCDM and its NHS and academic partners. An overview of the model of care is provided below and described more fully at **Appendix 4B**.

The new model of care has been developed by mapping and understanding patient flows for each specialty: how patients enter the system, the types of investigation undertaken, what happens during the patient's stay, and the discharge process.

It represents a radical re-examination of the way in which care is delivered.

The Trust has taken a whole systems approach to the emergency, elective and ambulatory care process.

Key principles underpinning the model are described below:

- Single portal entry for emergency admissions, through the Accident & Emergency Department and an Acute Assessment Unit
- Separation of emergency and elective patient pathways
- Groups of specialities by patient needs into clinical aggregations with similar resource requirements and skill requirements. Patients will be "pulled" into the appropriate specialty bed after assessment
- Single, combined general and specialty unit for levels 3 & 2 critical care
- Central ambulatory care facility for outpatients and day case patients requiring investigations and procedures with a recovery time of up to 23 hours
- Central imaging, pharmacy, pathology, therapy and clinical support departments
- Central inpatient theatres for elective and emergency work
- Modern career framework with both a multi-skilled and specialist workforce
- Telemedicine and EPR will play a key part in the rapid assessment of patients, allowing instant access to patient records, integrated care pathways and guidelines, investigative requests and reports, and pharmacy information, prescribing and scheduling systems

The resulting model has a vast and complex range of components when viewed at a specialty level but the overall model can be summarised as shown in Figures 4-3 and 4-4.

Figure 4-3: University Hospital Birmingham – Whole Hospital Model of Care

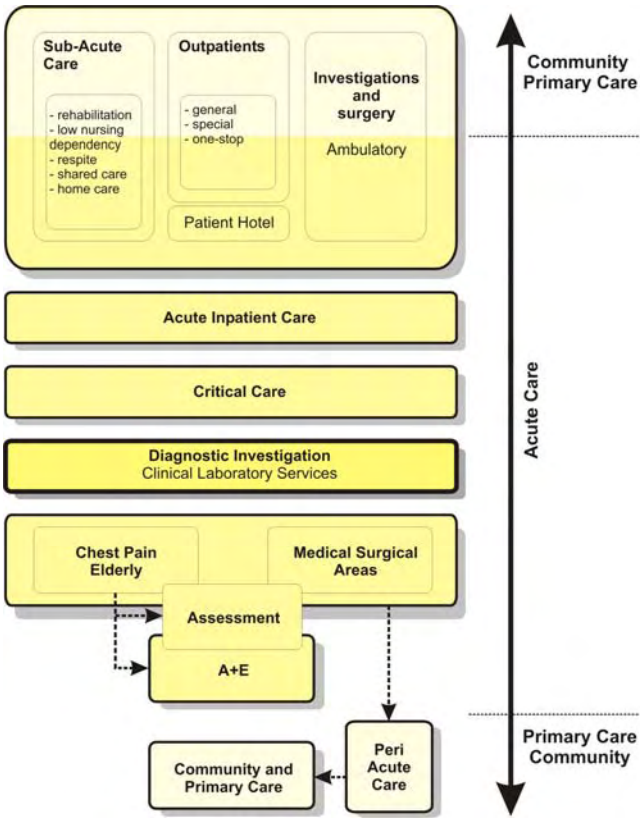
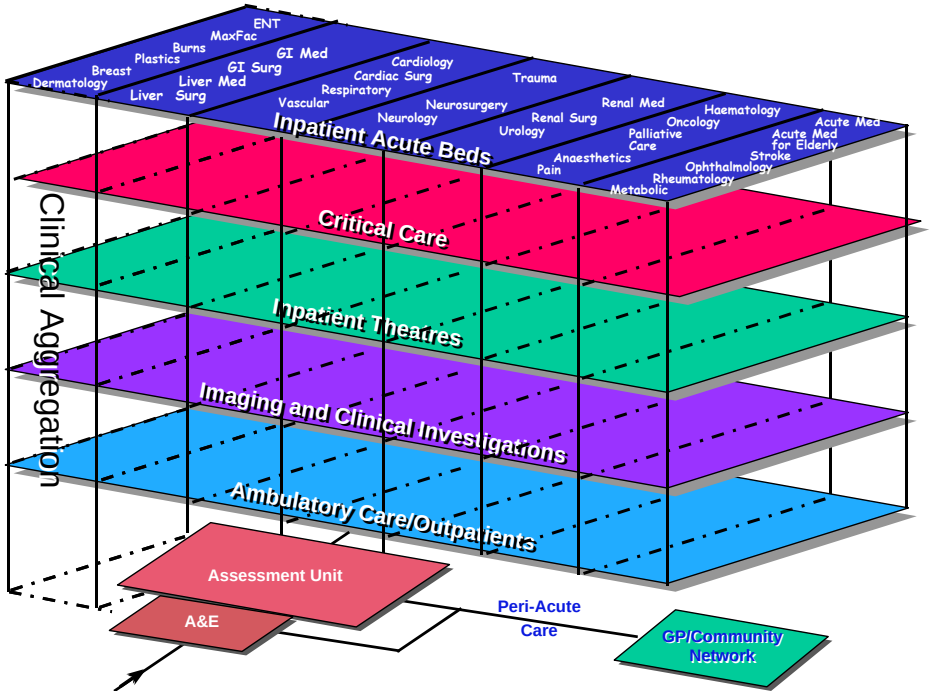


Figure 4-4: Whole Hospital Model of Care – Vertical communications through clinical aggregations



The figures illustrate both horizontal flows into and out of primary care (4-3) and the vertical communication through clinical aggregations (4-4).

While conceptual in nature, these diagrams have directly influenced the physical design of the new hospital buildings to ensure that clinical adjacencies are optimised to facilitate efficient and effective patient flows.

In addition to the principles outlined earlier, the new model of care and physical wards also meet the requirements for privacy, dignity and single sex accommodation.

In conclusion, the Model of Care represents a patient focused, flexible and streamlined approach to healthcare delivery. The philosophy promotes a positive approach to assessment and diagnosis, ensuring that the patient is cared for in the most appropriate setting.

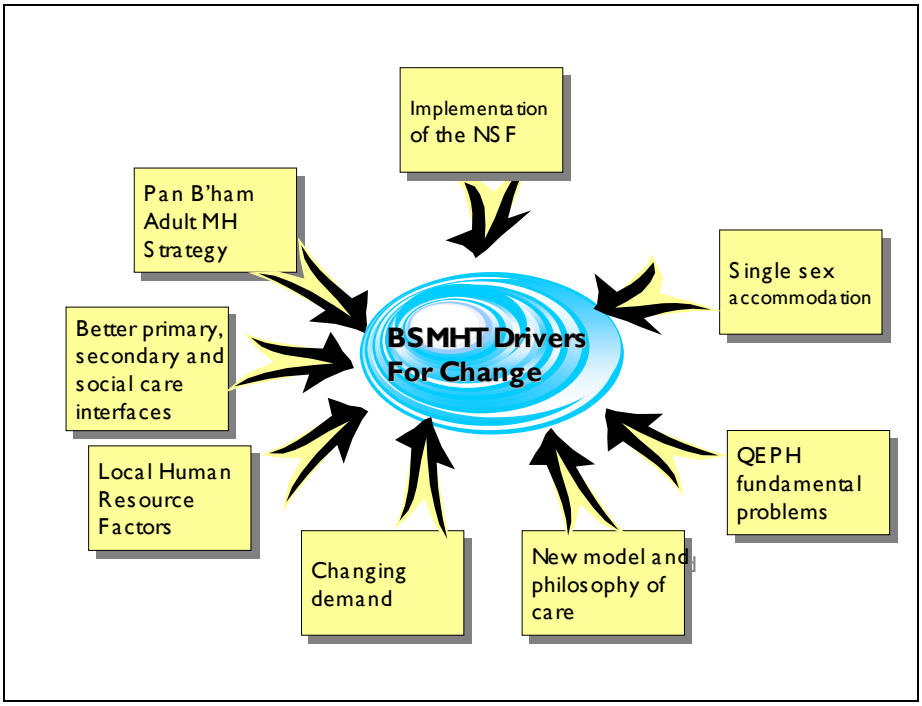
More details on individual services and departments can be found in the OBC and at **Appendix 4B**.

4.4 Case for Change – Mental Health

4.4.1 Trust Drivers for Change

In addition to the national factors outlined Chapter 3, there are a number of factors driving the need for change in mental heath services at a local level. These factors are summarised in Figure 4-5.

Figure 4-5: BSMHT Drivers for Change



4.4.2 The Service Need for Change

The process to review Birmingham's provision of general and specialist mental health services, which resulted in the Pan Birmingham Adult Mental Health Strategy, was conducted and influenced over a period of years since 1995. A summary of this process is contained in **Appendix 4C**.

The Pan Birmingham Adult Mental Health Strategy, entirely consistent with the NSF for Adult Mental Health, stipulated the service need for change. It recommended an integrated service model to include specific components of care:

- Local In-patient provision
- Access to Respite Care/Crisis Resolution
- Home Treatment
- Assertive Outreach
- Primary Care Mental Health Services

The former Birmingham Health Authority recognised that community components of the system would need to be developed if the Trust is to implement the full spectrum of care described by the NSF and Pan-Birmingham Adult Mental Health Strategy. The investment needed to bring about this change started in the financial year 2000/01. BHA recognised that this would need to be sustained on a recurrent basis, such that full implementation of the community alternatives would be in place by 2004/5.

4.5 Queen Elizabeth Psychiatric Hospital

Although the existing QEPH is a relatively new building, for the provision of modern psychiatric in-patient mental healthcare - it is outdated, inappropriate, and potentially unsafe. The case for redevelopment, rehearsed in detail in the OBC, and is provided at **Appendix 4D.** A summary of the case for change is also given in the following paragraphs.

4.5.1 Background

The QEPH was built in the 1980s to facilitate the closure of the old mental health hospitals that served south Birmingham. Although a relatively new building, it was not designed to enable the delivery of modern mental health services, as recommended by the National Service Framework and Pan Birmingham Adult Mental Health Strategy, nor does it provide an appropriate physical environment for mental health treatment and care.

Even though it is now known what was wrong with the old mental hospitals (their size, lack of privacy, potential for neglect and abuse), this knowledge did not provide a blueprint for their replacement. This was recognised in the National Service Framework.

The challenge of developing modern mental health services, which can balance the needs of supervision and safety with privacy/dignity and comfort, will not yield to simple formulaic answers.

The principal problems which the current QEPH cannot resolve without radical alteration are as follows:

Table 4-2: QEPH - Problem Areas

Problem Area	Specific Issues
Functional Suitability	Severe shortage of day, activity space and a shortage of bathroom and sanitary facilities. Each ward has 30% to 40% less space than recommended in basic NHS design guidance (HBN35). Service users (and staff) feel vulnerable in ward blind spots and hospital corridors. Outside courtyards are overlooked. Little opportunity for privacy generally. The limited therapeutic activity centre is poorly located. Reception and waiting areas are inadequate.
Changes in Demand	Increasing demand and changing clinical practice have resulted in a steady increase in severity and dependency levels of admissions over the past 10 years. Hospital treatment has become more clinically intensive. The average in-patient ward size (22 to 25 beds) is difficult to nurse; there is a need to reduce the size of individual wards/units to approximately 15 - 18 beds each.
New Philosophy of Care	There have been major changes in the way that mental health services are organised such that hospital and community services need to be integrated into a single system of care. The existing QEPH building was not designed to facilitate this integrated system.
Single Sex Accommodation	Providing safe care for women within a mixed sex environment is a priority. Current requirements are for the provision of single bedrooms and single sex day space. This cannot be achieved in current facilities without significant disruption.
Standards for Inpatient Mental Health Care	The QEPH fundamentally restricted BSMHT's ability to respond to and implement the NSF and Pan-Birmingham mental health strategy. The principal problems are summarised in **Appendix 4D**.
Service User Experience	Poor physical/ psychological environment for care, including lack of basic amenities and organisation for safety, privacy, dignity and comfort. Lack of involvement/engagement in the planning and review of their own treatment and care. A lack of 'something to do', nothing in place to aid meaningful recovery.

In summary, the Trust did not comply with the requirements of these standards. Moreover, as identified below, the quality of the QEPH building falls well short of acceptable standards.

The recommended minimum standard is Category B. Despite the fact that QEPH is only a decade old, its design is inappropriate for the delivery of modern mental health services, and the lack of space makes it incapable of being adapted to meet higher standards expected by recent guidance.

4.5.2 Conclusion

There is a powerful case for change. This has been assessed by comparing BSMHT's current service with the provision and facilities required to deliver modern mental health services, which are compliant with NSF and NHS Plan imperatives.

It is clear that BSMHT's ability to fully implement both national and local policy/strategy in service delivery terms is severely restricted by key factors:

- Lack of key integrated NSF service components of sufficient quality and quantity to deliver the NHS Plan and NSFs.
- The QEPH's lack of *functional suitability* in the delivery of high quality mental health care.
- The dislocation between facility location and population centres. Services are not tailored for the special needs of natural communities such as Sparkhill/Sparkbrook.
- Lack of local accessible mental health facilities in socially inclusive settings in south Birmingham.

The imperative for change is significant:

- Until recently, there has been an over reliance upon in-patient services to provide safe services. There is now the recognition that mental health services are whole systems, which work effectively only when the component parts are all in place and in balance. Alternatives to in-patient services provided by specialist mental health teams operating 24 hours a day have been shown to be effective in providing services that are safe, sound and supportive. It is important that BSMHT achieves this balance, with in-patient services as part of the system rather than the dominant sector, out of hours.
- The failure to develop comprehensive and integrated services will mean that the nature of mental health services will continue to be disjointed, patchy and dependent on where the patient/user lives.
- The failure to include any one component within the overall implementation plan will result in the ultimate failure of the whole service. The integrated services strategy, providing mental health services through diverse partnerships, is fundamental to the modern effective mental health service.
- The absence of appropriate modern facilities means that patients and service users are cared for in poor quality facilities, without adequate privacy, which do not meet the standards set out in The NHS Plan. Services will continue to be delivered from outdated and potentially unsafe facilities, which will not meet current standards.
- The failure to meet the training, teaching, research and continuous development needs of staff will result in low morale, poor staff retention, and limited recruitment appeal. Royal Colleges accreditation could be withdrawn.

4.6 Future Model of Care – Mental Health

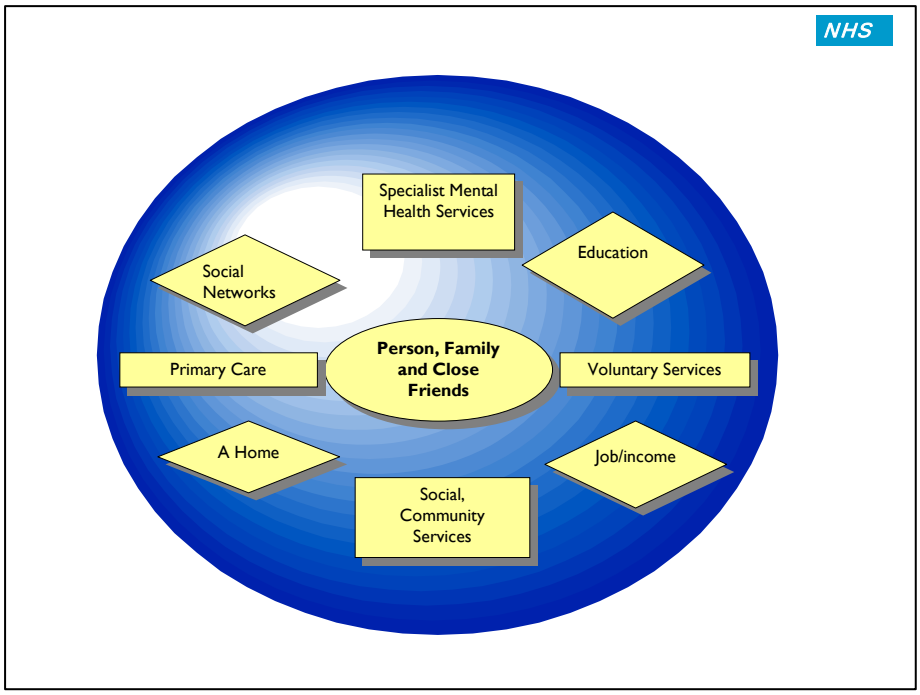
4.6.1 Overview of the Integrated Locality System of Care

A new integrated service model has been developed for Birmingham. This was presented in the OBC as described as:

- Community based;
- Whole system in approach;
- Local and accessible;
- Efficient and effective; and
- Empowering to Service Users.

The model of care has been developed further for the FBC and places patients and carers at the centre as depicted in the figure below. A fuller description is provided at **Appendix 4E**.

Figure 4-6: A Single System of Mental Health Care NSF



The new service model is based on the key principles summarised below:

- A shift in the primary focus of care from the hospital to the community.
- Continuity: all services managed as a single system of care.
- Services which are local, accessible and suitable.
- Emphasis on early assessment and prompt treatment.
- Access to mobile services (eg, Home Treatment) available 24 hours a day, 365 days a year.
- A shift in emphasis from single solutions, ie, medicating symptoms, to a wide range of interventions that directly impact upon and influence the quality of life, as well as efficacy of treatment.

- Service users being involved as participants rather than as passive recipients in the process of care.
- Supporting the need to bring meaningful activities into the heart of treatment programmes, including employment opportunities.
- Enhance the ability of mental health workers to develop meaningful relationships and agreements with other agencies, voluntary organisations and local communities.
- Facilitate better communication and co-operation between primary care and specialist mental health services.
- Support and promote access to components of everyday living.
- Develop with partners a wider range of supported accommodation thus reducing the likelihood of inappropriate admission and improving the quality of life for Service Users.

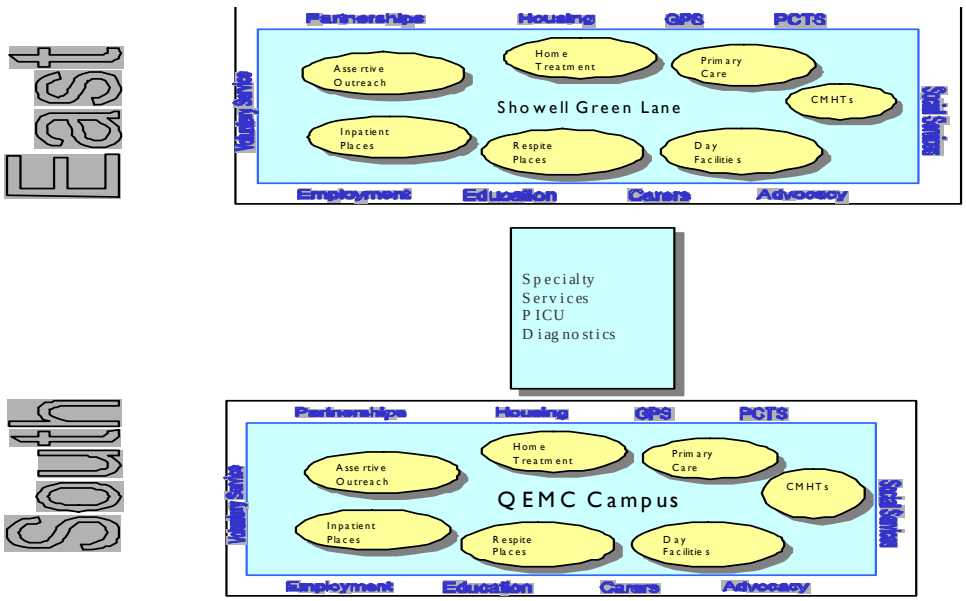
It is important to note that an integrated model of care which is community focused and based on single systems apply to both adult and older people services. The main difference is one of emphasis in determining the location of inpatient services:

- For adults, ‘geography’ is key and 'local' implies a setting within the community it services, tailored to meet the needs of different communities.
- For older people services, ‘geography’ is about the proximity to diagnostic support services hospitals to ensure that physical health needs are also met.

An important difference between the OBC and FBC is that the three locality inpatient units originally proposed are to be replaced by two locality-based adult units (at Showell Green Lane in the East and QEMC in the South) and an Older Person Unit at Moseley Hall hospital.

Key features of the proposed model of care are shown in Figure 4-7.

Figure 4-7: The Integrated Model of Care



Integrated professional teams and levels of service will form a whole system and will focus on localities.

The south sector community teams will be based in their communities and plans are underway to reconfigure Community Mental Health Teams to achieve co-terminosity with PCT

Local Health Groups to further underpin the seamlessness between primary and secondary care and local accessibility of staff.

The presence of three home Treatment Teams which provide crisis resolution on a 24-hour, seven day a week basis away from the hospital is an essential part of the model. These Home Treatment Teams will be co-located with in-patient services as planned in the OBC. These teams work across the boundary of in-patient and community based services, primarily focused in the community and acting as a bridge between the two service elements. The Crisis Respite Houses associated with Home Treatment Teams will be based in the communities served.

4.6.2 Benefits of the new Model of Care

The new model of care is service based rather than building based. New ways of working are envisaged which emphasise recovery, place the service user at the heart of services and promote social inclusion by offering more interesting, stimulating and mainstream activity which will, as much as possible, utilise local community resources.

Integrated professional teams and levels of service will form a whole system of care.

Changes in site configuration have not affected the commitment, observance and application of the model of care.

The consolidation of adult acute beds on a single location for SBPCT provides a dedicated focus to the needs of their patients. Within the unit services will be structured and organised to reflect specific localities within the catchment area. This will provide a localised feel for service users and their families while affording the benefits of staff support and shared infrastructure.

The location of Moseley Hall for older people services places the service more centrally in the catchment area for south Birmingham, improving access. It gives the opportunity for a more tranquil, less institutionalised setting than QEMC while still allowing access to adjacent diagnostic services for physical health problems. On QEMC older people would have required ambulance transfer for attendance at QEH whereas now diagnostic services are available within the same building. Services at Moseley Hall have an outpatients department specific to the needs of older people and therefore clinically more appropriate whereas on QEMC they would have shared the single out patients department for all mental health services on site.

4.6.3 Features of the Adult Mental Health Service Model

Each Locality will have an integrated system based on the PCT catchment areas, linking in-patient services to specialist community and primary care mental health provision. The QEMC site will include the purpose built Intensive Care Unit (for patients whose behaviour is so disturbed that they cannot be managed in open acute treatment places).

In order to provide services that are local and accessible, enhanced functionalised Community Mental Health Services with 24-hour capacity will provide the full range of care components of the integrated service in each Locality as summarised below.

Table 4-3: Components of the New Integrated Service	
Integrated Inpatient Services	
Home Treatment / Crisis Resolution	Home Treatment is the provision of a direct intensive service to the patient's home in the community by a specialist multi-professional mental health team. This service ensures a mobile, 24-hour, 7-day availability, providing an immediate response and assessment of whether the patient can be managed at home (ie, out of hospital). It therefore provides a gate keeping function to mental health services, referring them to the most appropriate services and also monitors in-patient stay to ensure appropriate early discharge from hospital.
Assertive Outreach and Continuing Needs Service	The assertive outreach teams provide a service for people who require a high level of input and who may also be difficult to engage. The majority of clients will have experienced repeated episodes of relapse in the past. The continuing care teams provide services for people who suffer from severe and enduring mental health problems, but who are easier to engage and have been stabilised for some time.
Primary Care Mental Health Service	Dedicated specialist mental health workers, working within primary care to resolve and treat many of the mental health issues, which present in primary care and often go untreated. This joint approach will enable GPs to identify when cases need to be referred to secondary services for assessment and treatment
Respite Beds	To prevent unnecessary hospital admission, respite treatment places will be provided when home circumstances are too pressurised but fully pledged hospital treatment is unnecessary. Supported by home treatment teams, respite treatment places will provide temporary accommodation to clients experiencing a crisis and whose resolution of crisis is anticipated to be relatively short term.
Inpatient Integrated Services	Three categories of inpatient treatment places will be provided to support the integrated locality model. Intensive Care Unit (ICU) treatment beds - for patients whose behaviour is so disturbed that they cannot be managed in open acute treatment places. Adult acute treatment beds – for patients who require in-patient care and treatment and who cannot be properly cared for at home or in a respite house. Alternative treatment options – home treatment or respite care. Inpatient services will be delivered for each Locality Team.
Early Intervention Services	To focus on early detection and intervention in severe and enduring mental illness, working particularly with people experiencing their first episode of severe mental illness. A city wide service has been developed.

These integrated systems will mean that continuity of care for patients along the clinical pathway is maintained, ie, the patient receiving treatment at home when and if inpatient admission becomes necessary will be cared for by the same team.

4.6.4 *Features of the Older Adult Mental Health Service Model*

The Trust has shaped and developed its older people service on a model that is underpinned by an integrated and community based service, with local specialist community teams delivering home, respite and continuing care services.

Figure 4-8: Older Adult Mental Health Service Model

Source: Audit Commission

Most services will therefore be delivered in the community, either in or close to people's homes. A locality focus for multi-agency working involving primary care, secondary care (mental health and general medical services) and social services is an essential component.

Table 4-4: Components of the New Integrated Service Model for Older People

Service Component	Description
Home Support Service	Provides home-based treatment direct to the patient's home in the community by a specialist multi-professional mental health team. This service ensuring 7 days a week availability helps users with daily living skills, and enables them to attend day centres. It includes home respite for carers of people with dementia.
Primary Care Liaison	This service works alongside primary health care teams, helping to raise awareness of mental health problems and how to manage them. This service provides training, advice and support as well as screening for patients with early emotional distress. A dementia care package has been developed to assist GPs and other primary care workers.
Outreach Service	The main focus of this is to work in partnership with local established community day centres and the Team has established specific facilities for South Asian elders with dementia and another for African Caribbean elders. This service was awarded NHS Beacon Status in 2001
Respite Care	Support to carers is provided by ensuring that users can be cared for within one of three respite community units.
Continuing Care	Long-term support is provided for those patients who either suffer from dementia and/or whose mental health needs a longer period of support and who may have spent much of their lives in institutional care.
In-patient Service Assessment Day hospital	Access to specialist care with three dedicated wards together with Day Hospital, Therapies Centre and an Out Patient Department. There is also access to other services for older people provided by South PCT at Moseley Hall.

As recommended, Older People Services are already also organised on an integrated hospital and community basis with over half of the inpatient services provided from within the community. However, it should be noted that the drivers for the location of older people's assessment beds are different from those for adult acute inpatient beds. Close links between mental health services and physical health services for older people are essential because so many users have both kinds of needs. The co-location of services at Moseley Hall therefore enables these requirements to be met.

4.6.5 Features of the Specialist Mental Health Services Model

BSMHT's current strategy recognises that some people will require access to more specialised services that cannot be provided on a locality or a city-wide basis. Birmingham is fortunate because it is a base for a range of specialist services, many of them currently based at the QEPH, and recognised as centres of excellence underpinned and supported by strong research activities. Examples include the Neuropsychiatry service, which was awarded a Triple A rating by the National Epilepsy Task Force.

The Trust's specialist services are part of the Regional Specialist Review with both Eating Disorders and Neuropsychiatry services midway through the process. The Regional process will be used to shape and refine these services. The co-location of these services with a general hospital and University is necessary, due to the range of investigations (general acute) and liaison functions involved, and these important physical and functional relationships need to be maintained.

4.7 Proposed Estates Strategy for Inpatient Units

This FBC will deliver new in-patient facilities, to facilitate the implementation of the NSFs key deliverables, and the equitable provision of services, local to the communities served.

Inpatient treatment beds will be provided as follows:

- Separate buildings on the QEMC for Adults Services, serving South Birmingham PCT, and Specialities which incorporates accommodation for the University, Library R&D and FM Services, including a restaurant facility;
- A further Adult facility in Sparkhill serving part of the HoB PCT; and
- An Older Adult facility at Moseley Hall Hospital, integrated with the existing elderly physical health service.

4.7.1 Key Design Features for a New Inpatient Facility

In each case the buildings will have the following characteristics:

- Small – situated in, and as part of, the community they serve;
- Flexible – space designed to enable multi-purpose use;
- Single, ensuite bedrooms & single-sex day space without compromising safety and security;
- Women only day activity space to be provided;
- Therapeutic environment with good levels of natural light; and
- Ventilation and sound insulation to ensure privacy and confidentiality.

They will be designed to:

- Comply with single-sex accommodation guidance; the proposals in this FBC radically change the availability of single-sex accommodation, as shown overleaf:

Table 4-5: Provision of Single Rooms for Mental Health Inpatients		
Service	**% of Single Rooms**	**Proposed in this FBC**
Adults Service:		
Acute	9%	100 %
ICU	25%	100%
Older People	25%	90 % (requirement for some double rooms for couples or siblings)
Specialties:		
Deaf Service	17%	100%
Mother & Baby	100%	100%
Eating Disorders	25% single rooms	100%

- Comply fully with the Disability Discrimination Act;
- Meet the specific needs of specific patient groups - use of specific lighting or technology, eg, vibrating alarms for people who have hearing problems;
- Enable good observation and supervision of all patient areas, providing a safe and supportive environment to patients;
- Reduce suicide risks by ensuring the highest standards of Health and Safety;
- Incorporate functional relationships; and
- Provide internal and external amenity and recreational space and facilities.

In addition the buildings will:

- Maximise the efficiency and effectiveness of accommodation in terms of its functional suitability, space utilisation, energy performance and minimise maintenance needs;
- Support patient choices and NHS Plan standards;
- Provide a mix of semi-private and public space to allow different levels of participation; and
- Provide good signage - providing alternative choices of routes/travel around buildings.

4.8 Summary of Proposed Mental Health Development

In conclusion, the major capital investment described in this FBC will enable BSMHT and its partners to deliver the required progressive pattern of integrated specialist mental health services. It will provide more seamless care, better access, quicker response, and a more appropriate range of therapies, services and facilities. Specifically it will:

- Fully develop its adult integrated model of care, provided within modern inpatient facilities.
- Comply with single-sex guidance (single en-suite rooms for adults/older people and specialties).
- Specifically comply fully with the Disability Discrimination Act.
- Develop purpose built inpatient services for Specialty services.
- Separate inpatient units for Adults at QEMC and Showell Green Lane.
- Provide new build facility for Older Adults at Moseley Hall Hospital that will enhance older people services by developing inpatient service to complement progressive model of community care.

BSMHT will deliver these ambitious, radical service improvements in partnership with service users, their carers, the wider interests of the community and in line with Government policy.

THE OUTLINE BUSINESS CASE

5.1 Summary

- The OBC was developed following approval of the SOC in February 2001.
- Early in the process, seven overarching investment aims were established; these subsequently provided the objectives and benefit criteria for the appraisal.
- Five options were short-listed for formal appraisal ranging from a Do Minimum scheme to a choice between tall or low-rise acute developments coupled with a selection of configurations for mental health facilities.
- The Preferred Option, following economic, financial and non-financial evaluation was Option 5. This option included a 1,185 bed acute hospital on the QEMC campus in a mixture of new build and retained estate; a 137 bed mental heath facility, in three buildings, on the land south of Vincent Drive; and two additional mental health facilities, with a further adult 75 beds, in Sparkhill and Stirchley.
- Subsequently, due to unavailability of land in the Stirchley area, the mental health component of the scheme was revised to include Moseley Hall hospital as an alternative site.

5.2 Introduction

The Outline Business Case (OBC) for *The Birmingham New Hospitals Project* (BNHP) was issued by the Project Team in November 2001 and received formal approval from the West Midlands Regional Office in March 2002. The OBC was prepared following the successful approval of a Strategic Outline Case (SOC) in February 2001.

A first draft of the SOC addressed the Acute need only. It was then agreed that the needs of the two Trusts were complimentary and the final version of the SOC addressed the needs of both. Three Options were identified in the SOC: 'Do Minimum'; 'Plaza North'; and 'Plaza Integrated'. The 'Plaza Integrated' Option was clearly identified as the most appropriate for both Trusts.

For both Trusts the fundamental Investment Decision on which the SOC and subsequently the OBC were predicated was a requirement for modern well designed infrastructure to support the introduction of new ways of organising and delivering clinical care in the new millennium.

The OBC identified the Trusts' preferred option as being: a single site acute hospital on the QEMC campus, replacing Selly Oak and the Queen Elizabeth hospitals; and a replacement for the Queen Elizabeth Psychiatric Hospital on an alternative site on the QEMC campus but with a number of adult beds re-provided closer to the local communities they would serve.

This chapter gives a summary of the OBC option appraisal. Project objectives, the non-financial benefits and Project constraints are restated.

5.3 Project Objectives

Early in the process of producing the OBC, the Project Board agreed seven overarching Investment Aims that reflected the multi-stakeholder significance of the Project. These were to:

- Provide a centre of excellence in patient care;
- Contribute to the wider community's plans for the regeneration of South Birmingham;
- Create a focus for world-class teaching, training, education and research,
- Improve accessibility to services for patients and service users;

- Create a therapeutic and flexible environment from which high quality patient care can be delivered;
- Work with all partners in and users of Birmingham's whole health economy to provide an integrated model of care; and
- Make the most effective use of resources.

Against each of these 7 Investment Aims the two Trusts defined a number of service specific Project Objectives; 38 for UHBFT and a further 30 for BSMHT. These are set out in **Appendix 5A**.

5.4 Short-listed Options

The different timing of the two Trusts' involvement in the Project meant that the processes to formulate Long and Shortlists were undertaken separately during 1999 for UHBT and 2000 for SBMHT. A Long-list of 40 options for UHBFT and a further 19 for BSMHT were identified and the two Trusts appraised all of the options against the two broad considerations of practicality and clinical appropriateness.

During the OBC stage, and as a consequence of the outcome to the Statutory Consultation on the development of mental health services in the south of the City, which supported the development of a 'Locality' approach for Adult Services, the Project Team refined the three composite options that had been established for the SOC and also two further options were generated. The five options subject to appraisal were:

Table 5-1: OBC Options Shortlist

Option 1	Do Minimum for both Trusts i.e. retain and upgrade all three hospitals.
Option 2	Do minimum for the QEPH and a new acute hospital. Retention and refurbishment of the QEPH restricts the footprint available for the acute facilities which would therefore, have to be built 'tall'.
Option 3	Retain and upgrade the QEPH to reprovide a reduced number of beds, develop two new Locality Units and a new 'tall' acute hospital.
Option 4	New mental health facilities on the land south of Vincent Drive and a new acute hospital on the car parks and the space released by the demolition of the existing QEPH. This enables the construction of a 'lower rise' acute hospital.
Option 5	New mental health facilities on the land south of Vincent Drive with a reduced number of beds, develop two new Locality Units and a new 'lower rise' acute hospital.

As a reference option, and at the request of the WMRO, a single site 'green field' solution for both the acute and mental health developments was also costed, although no suitable site was identified.

The detailed content of the five options is set out in **Appendix 5B**.

5.5 Non Clinical Benefits Appraisal

A Stakeholder Advisory Group, chaired by the Chair of the Project Board, assigned weightings to each of the benefits that had been identified. This Group agreed that the clinical benefits should carry ⅓ of the total weight and the non-clinical benefits ⅔.

A Benefits Appraisal (non-monetary evaluation) Exercise, organised as a series of interactive staff workshops, was undertaken. These sessions were arranged at widely differing times of the day, including nights and at weekends, so that as many staff as possible were able to participate.

The outcome of the non-monetary evaluation for each of the 5 options is set out in the table below:

Table 5-2: Weighted Scores for short-listing options

		Option				
Benefit Criterion	**Weight**	**1**	**2**	**3**	**4**	**5**
Quality	10.55	18.76	33.09	44.86	69.74	79.59
Patient Charter & NHS Plan Compliant	7.99	15.59	27.40	38.99	52.40	61.23
ICT	9.77	35.14	48.61	54.45	69.73	72.40
Education, Training and R&D	11.36	40.13	55.78	63.22	83.54	85.75
Staffing Issues	11.40	31.92	47.59	59.25	79.64	84.36
Environmental	11.99	28.67	43.91	55.43	84.90	90.66
Accessibility	8.88	20.62	34.09	43.61	61.17	67.04
Timing of Benefit Realisation	5.95	11.91	19.73	25.25	42.05	45.24
Flexibility	9.80	18.68	30.78	43.54	69.07	75.86
Impact of Construction	6.62	13.06	17.02	21.27	44.54	46.72
Acceptability	5.7	12.00	18.71	25.35	40.16	43.17
Clinical Effectiveness	12.22	24.51	46.49	61.73	86.72	95.86
Clinical Efficiency	11.26	22.26	48.96	60.06	85.39	89.25
Equipped	10.37	24.24	46.84	56.40	77.78	82.56
Quality of Care	9.19	24.56	44.95	48.97	68.06	75.70
Quality of Outcomes	6.67	17.55	29.91	35.86	48.85	51.98
Total		**359.60**	**593.86**	**738.24**	**1,063.74**	**1,147.37**
Rank		**5**	**4**	**3**	**2**	**1**

As this table demonstrates there was both consistency between the weighted scores across all criteria and also in the ranking of each option.

Based on comments raised at the workshops, and following a robust brainstorming session undertaken by key stakeholders in the local health economy it was possible to identify advantages and disadvantages of the 5 options and these are set out in **Appendix 5C**. This process confirmed Option 5 as being the Preferred Option.

5.6 Financial Appraisal

The capital and revenue requirements for each of the five options were calculated in detail for the OBC. For the revenue costs, included an analysis of the clinical, non-clinical and building services cost structures. Within each category, costs were broken down into pay and non-pay and Capital Charges, and were projected for year 2008/9. The table below identifies these costs for each option:

Table 5-3: OBC Financial Appraisal

	Option 1 £000s	Option 2 £000s	Option 3 £000s	Option 4 £000s	Option 5 £000s
Capital Expenditure (MIPS 310)	255,575	327,158	331,333	308,010	306,176
Revenue Expenditure (2001/02)	360.68	365.07	366.02	360.87	361.18

Analysis demonstrated that overall, the new build options (Options 4 and 5) would, in the longer term, be cheaper in annual cost terms to the local health economy. The difference

between options 4 and 5 was so marginal as to render financial factors insignificant in choosing between them.

5.7 Economic Appraisal

An economic appraisal of each of the five short-listed options determined which of them represented best value for money. All costs are stated at a 2001/02 price base. The value set against the Operational Risk for each option was derived from the Risk Register, the base cost of the Risk, its impact and the likelihood of the risk to materialise. The table below sets out the initial NPC for each option, and also with operational risk factored in to give a 'total Project' value:

Table 5-4: OBC Economic Appraisal

	Option 1 £000s	Option 2 £000s	Option 3 £000s	Option 4 £000s	Option 5 £000s
Initial NPC	5,951,411	5,914,616	5,922,529	5,864,766	5,869,411
Operational Risk	239,177	199,091	163,039	185,692	117,655
Total NPC	6,190,588	6,113,707	6,085,568	6,050,458	5,987,066
Rank	**5**	**4**	**3**	**2**	**1**

A detailed Sensitivity Analysis, which involved modelling of project cashflows, confirmed that Option 5 remained the preferred option. This is set out in **Appendix 5D**.

A Cost to Benefit ratio, not undertaken at the OBC stage, but now included in this section is set out below:

Table 5-5: Shortlisted Options - Cost Benefits Appraisal

	NPC (£000s)	Benefit Score	Cost/Benefit	Rank
Option 1	6,190,588	359.60	17,215.21	5
Option 2	6,113,707	593.86	10,294.86	4
Option 3	6,085,568	738.24	8,243.35	3
Option 4	6,050,458	1,063.74	5,687.91	2
Option 5	5,987,066	1,147.37	5,218.08	1

5.8 The Preferred Option

The Preferred Option, as set out in the OBC, following economic, financial and non-financial evaluation was Option 5. This Option included:

- A 1,185 bed acute hospital on the QEMC campus in a mixture of new build and retained estate;
- A 137 bed mental heath facility, in three buildings, on the land south of Vincent Drive; and
- Two additional mental health facilities, with a further adult 75 beds, in Sparkhill and Stirchley.

The acute hospital will incorporate replacement facilities for both the Royal Centre for Defence Medicine and the University of Birmingham.

The capital and revenue consequences of Option 5 to each Trust (excluding the impact of 'Consumerism'), as stated in the OBC is set out in the table below:

Table 5-6: OBC Capital and Revenue Impact by Trust		
	UHBFT	**BSMHT**
Net Capital Costs (£000s) @ MIPs 310	266,009	40,167
Revenue costs (£000s) (2001/02)	283,268	77, 914

A Section 106 Agreement with a value of circa £10 million will ensure that transport infrastructure to the QEMC campus will be improved both around the site, including facilities for pedestrians and cyclists, and, as part of the wider regeneration of Selly Oak, access to the campus would be greatly enhanced by the Selly Oak New Road. Contributions would also be made towards the environmental enhancement of the local Bournbrook Corridor.

5.9 Conclusion

A thorough and robust analysis of the economic, financial and non-financial benefits of each of the 5 short-listed options demonstrated that, in all cases, the new build option on the QEMC and two 'locality' sites was the best option in terms of VFM and benefits to the people of Birmingham and beyond.

The scheme was proven to be affordable and had the widespread support of key stakeholders in the wider health economy in Birmingham and beyond, the City Council, the University of Birmingham, and the Ministry of Defence.

5.10 Post OBC Developments

5.10.1 Mental Health

During the Preferred Bidder, stage due to Affordability considerations and also as a consequence of non-availability of land in the Stirchley area of Birmingham, the Preferred Option for the Mental Health Trust (in terms of building configuration) was revised. The service now envisages four buildings across three sites. The configuration is now:

- 108 beds (in two separate buildings) on the QEMC campus (Adult and Specialities);
- 32 beds at Showell Green Lane (Adult); and
- 63 beds at Moseley Hall Hospital (Older Adult); and
- The investment in Community Teams as alternative treatment places e.g. Home Treatment and Respite/Crisis Resolution, did not alter.

Further details of these changes are included in Appendix 4C.

The OBC increased mental health bed numbers from 197 to 212 built but only 203 beds were staffed, an increase of 6 staffed beds in Adult Acute services. Older Adult and Specialties services are re-provided on a like for like basis. It is the assessment of BSMHT that 203 is the appropriate capacity for the activity projections. The additional built beds were included to 'future proof' the previous South Birmingham Mental Health Trust.

The development of more community based services over the last few years means that there is less reliance on beds for mental healthcare so an increase in inpatient capacity should not be necessary. Furthermore, the merger with Northern Birmingham Mental Health Trust has brought a total of over 900 beds to the new Trust and therefore the additional 9 Adult Acute beds are no longer required.

5.10.2 Acute

As a consequence of a future capacity planning exercise necessitated by central guidance the acute hospital has increased marginally in bed numbers to 1,231. Further details are given in Chapter 6.

The OBC included the procurement of level 6 EPR which was subsequently separated from the main PFI procurement and is now part the National Programme for IT, Connecting For Health.

PUBLIC SECTOR COMPARATOR

6.1 Summary

- This chapter builds on the work undertaken at OBC to develop the PSC scheme. Activity and capacity projections have been updated to reflect current conditions, together with revised capital and revenue projections for the proposed development.
- Acute activity projections anticipate a 12.6% increase in emergency admissions over the 7 years to 2011. This increase represents half of the prevailing trend over the last three years with the remaining expected growth addressed through a range of community developments designed to prevent hospital admissions.
- Elective work will grow by 22.6% due to a combination of demand pressures, improved waiting times and agreed service developments.
- Due to improved performance across all specialties, the most significant impact of the elective growth will be seen in rising day cases. The elective inpatient length of stay will rise from 4.7 to 5.5 days to compensate. Emergency lengths of stay will fall by 18%.
- The new acute hospital will require 1213 beds compared with the current baseline of 1092, an increase of 11%. Overall bed occupancy will fall from 92% to 82%.
- Total outpatient attendances will rise by 50,000, an increase of 12.1%
- The new hospital will be supported by 30 operating theatres (up from 23), 52 imaging suites (up from 40), 53 clinical support areas (down from 60) and 160 consultation rooms (down from 183).
- Despite significant increases in resources in many areas, the total floor area of the new hospital will be similar to that of the current facilities.
- A new service model for adults will be developed with a more whole system approach with community teams working more closely with the inpatient service;
- Year on year increase in activity for adults is predicted however, the impact of Home Treatment and alternatives to hospital admission will reduce pressure on beds;
- Year on year increase in activity for older adults is predicted
- Specialities will remain broadly stable with only minor changes;
- Over 90% of beds will be single with their own En suite facility;
- The new mental health service will be provided from four new buildings on three sites in the south of the City;

6.2 Activity Projections – Acute Services

UHBFT's review of current practice and future service model focused heavily on projections of activity and identification of facilities needs to meet those activity levels. These were set out in detail in the OBC. The process adopted in the FBC to update these projections can be found at **Appendix 6A**.

Taking into account demographic changes, prevailing activity trends, agreed specific growth cases (mainly for specialist services) and the planned transfer of intermediate care activity in to the community, the overall projections of activity and performance to the year 2011 (when the new hospital becomes fully operational) are contained in the following table:

Table 6-1: Comparative Activity and Performance 1997 to 2011					
Category	**1997**	**2001**	**2004**	**2011 FBC**	**cf 2008 OBC**
Finished Consultant Episodes (FCEs)					
Emergency inpatients	31,295	32,592	47,624	53,648	36,245
Elective inpatients	20,805	16,473	18,483	18,721	16,970
Day Cases	20,167	23,207	23,426	32,652	37,598
Regular attenders	19,690	20,457	26,437	26,433	23,190
Total FCEs	**91,957**	**92,729**	**115,970**	**131,453**	**114,003**
Admissions					
Emergency inpatients	*25,868*	*26,940*	34,686	39,073	*29,955*
Elective inpatients	*20,660*	*16,358*	18,300	18,535	*16,852*
Day Cases	*19,960*	*22,969*	23,194	32,328	*37,598*
Regular attenders	*19,690*	*20,457*	26,437	26,433	*23,190*
Total Admissions	**86,178**	**86,724**	**102,617**	**116,370**	**107,595**
New outpatients	99,812	95,387	110,062	122,942	109,381
Follow up outpatients	226,516	273,179	301,832	338,126	236,542
Total Outpatients	**326,328**	**368,566**	**411,894**	**461,048**	**345,923**
Occupied Bed Days					
Elective inpatients	88,721	78,153	85,100	102,614	100,289
Emergency inpatients	233,994	242,478	270,470	249,931	214,184
Total OBDs	**322,715**	**320,631**	**355,570**	**352,545**	**314,473**
A&E attendances	n/a	68,920	76,145	95,000	87,776
Average LOS					
Elective inpatients (days)	4.3	4.7	4.7	5.5	5.9
Emergency inpatients (days)	9	9	7.8	6.4	7.1
Combined ALOS (days)	**6.9**	**7.4**	**6.7**	**6.1**	**6.7**
Other Performance					
Day Case Rates	49%	58%	56%	64%	69%
Weighted average % occupancy	90%	92%	95%	82%	82%
Outpatient DNA rate	**14%**	**14%**	**9%**	**5%**	**5%**

Note: Figures in italics are estimates. Agreed 2008 OBC figures are included for reference.

The table shows historical and forecast activity trends. It shows that, in general, activity levels forecast in the OBC have already been reached and new forecasts have been made for 2011.

The forecasting model used for the OBC has been altered in recognition of the fact that the way care is delivered has been changing over the last few years and will continue to change in the foreseeable future. Specifically, emergency attendances at A&E are now more likely to be admitted for a short length of stay rather than be kept waiting in A&E, and community capacity to enable avoidance of admission or to reduce length of stay is being built up.

- The last three years have seen significant growth in the level of **non-elective activity**, Consequently, a straight line extrapolation of numbers of emergency admissions suggests that this figure would approach 46,000 by 2011 after allowing for a reduction in admissions to allow for the 5% target reduction in non-elective bed days from 2003/4.
- Analysis of the most recent data, however, has also shown that the length of stay for emergency admissions is also falling quite dramatically; in the current financial year, there has actually been a slight fall in longer stay patients but a 30% increase in those admissions with a length of stay of a day or less. To a large extent, the impact on beds has therefore been balanced out by these competing factors.

- In the future, with appropriate community services in place, many of these patients will not reach the hospital and a substantial proportion of those that do should be assessed and returned to the community without entailing a ward stay. For the FBC, an assumption has been made that half the extrapolated increase in emergency admissions will be avoided and half will be absorbed by the Trust through a 18% improvement in the length of stay. Taking all of these factors into account, the Trust anticipates that emergency admissions will rise to just over 39,000 by 2011.
- **Elective admissions** are expected to see a slight increase, in line with the current trend and primarily due to the proposed developments in specialised services. The Trust is predicting a range of developments in tertiary elective work which tends to be more complex in nature and draws patients from a wider catchment area.
- In the general specialities, the proportion of **day case** activity is set to increase significantly over current levels. Much of this increase will be achieved by ensuring that all patients who currently stay for one night are in future admitted into the 23 hour ambulatory care facility. The projected increase in the FBC is not to the volume forecast in the OBC. This is partly because the significant increasing trend in day cases seen towards the end of the last decade has not been sustained. Two reasons can be cited for this:
    - Much of the predicted increase in elective activity is tertiary in nature and does not lend itself to day case work.
    - Within 6 years it is anticipated that a number of minor procedures currently performed as day cases could be treated in an outpatient setting.
- **Average lengths of stay** for emergency activity will continue to fall and will reduce by 18% by 2011. Many emergencies in the future will entail short stay admissions to the acute assessment beds. The length of stay for elective work will rise as more activity is converted to day cases leaving the specialist and complex workload behind. Approximately 5% of planned future bed days will take place in the community through service developments which will obviate the need for around 60 beds. Taking elective and emergency work together the overall reduction in length of stay will be around 10%.
- **Regular attenders** are primarily dialysis patients. The Trust is currently developing a strategy to see the future provision of dialysis become less hospital focussed. This means that the numbers of patients receiving dialysis at UHB will remain constant though the overall volumes are set to increase significantly.
- Overall, **outpatient activity** is set to increase by 17% over the 7 years (equal to an annual rate of around 2.3%). The increases in elective and outpatient numbers are partly calculated to achieve future waiting time targets, but additional follow up activity has also been incorporated to support the anticipated increases in inpatient activity, recognising that some work will be undertaken in the community in future.
- **A&E attendances** are growing steadily (though a greater proportion are currently being admitted) in line with the OBC forecast. A slight slowing in the current trend has been allowed for in anticipation that community developments will avoid some of the hospital attendances.

Beyond 2011 it is difficult to predict volumes of activity with a fine degree of accuracy. In the last decade there has not been a single year in which emergency admissions have fallen. Yet, despite the fact that the rate has increased in recent years, with the population relatively static it is difficult to see how this trend in rising non-elective activity can continue indefinitely. While local studies have shown that none of the current admissions are inappropriate, many of them would be unnecessary with more investment and development in community services. Furthermore, with practice based commissioning and new initiatives in chronic disease management, many parts of the NHS are planning for significant reductions in non-elective activity.

More locally, SBPCT have a number of initiatives to reduce the levels of emergency admissions, including the introduction of an unscheduled care centre and a range of initiatives for managing chronic disease; these are explained more fully in Chapter 3.

Elective activity at UHBFT is subject to two competing forces. In general, elective inpatient activity is likely to decrease as day case rates rise. However, the specialist nature of much of the Trust's work means that more complex elective work is likely to be drawn towards the new hospital maintaining a higher length of stay.

Possible mid-point scenarios are provided in the table below:

Table 6-2: Long Term Activity Projections

	1997	2001	2004	2011	2016	2021
Emergency	25,868	26,940	34,686	39,073	40,959	43,462
Elective	20,660	16,358	18,300	18,535	20,186	21,978
Day Case	19,960	22,969	23,194	32,328	35,196	37,500

Trend graphs supporting those projections are provided in **Appendix 6A**. While the figures above show a gradual increase in activity across all categories, there are scenarios which would see more significant increases or even quite substantial reductions. The scenarios above would provide a compromise between the competing forces.

Specific activity scenarios for the next few years are developed more fully in Chapter 18. However, while activity may gradually increase, the predicted short-term pressure on beds is likely to be alleviated in the next decade by continuing falling lengths of stay, facilitated particularly by better technology giving rise to lower dependencies and the implementation of earlier discharge arrangements in the community.

6.2.1 Capacity Requirements

On the basis of the projected future activity shown above, capacity modelling has been undertaken for the following elements of the service across all acute specialties.

- Inpatient beds by elements of care
- Operations in theatres and procedure rooms
- Diagnostics in imaging and clinical physics rooms.
- Clinical investigations in clinical investigations rooms
- Outpatient examinations and consultations in rooms
- Accident & Emergency assessments in rooms and cubicles

The process and assumptions used for bed and theatre projections can be found in **Appendices 6A** and **6C**.

Inherent in the capacity modelling exercise is the assumption that improved efficiency in the use of physical capacity will be required to ensure affordability and to allow reduced average occupancy rates for beds. Reducing average occupancy rates in itself contributes to improved efficiency, for example through the avoidance of cancellation of operations as a result of a lack of beds.

6.2.2 Future Bed Occupancy

In line with national guidance the FBC assumes substantial reductions in bed occupancy cross all departments.

The table below provides a breakdown of occupancy rates used to provide future bed capacity requirements:

Table 6-3: Future Bed Occupancy		
Bed Type	**2001**	**2011**
Acute Assessment	~ 90%	70%
Acute Specialty	~ 90%	83%
Sub Acute	90%	85%
Critical Care Levels 2&3	~ 100%	76%
Critical Care Level 1	~ 100%	85%
Patient Hotel	~ 90%	90%
Ambulatory Care	90%	90%
Weighted Average	**92%**	**82%**

Note: The average percentage occupancies were set according to other leading healthcare planning and reported practice developments.

Where activity is anticipated to be more irregular and/or unpredictable, lower levels of average percentage occupancy have been used. For example, the average occupancy in the Acute Assessment Unit has been set to meet peaks and troughs in emergency demand.

The combined weighted average percentage occupancy of 82% complies with the requirements of the National Beds Inquiry. This is based on a planned efficiency gain reflected in reduced average lengths of stay for both elective and emergency FCEs across the Trust.

6.2.3 Future Bed Numbers

The table below provides a breakdown of beds required to accommodate future activity to the defined occupancies.

Table 6-4: Future Bed Numbers		
Bed Type	**2001**	**2011**
Acute Assessment	54	70
Critical Care Levels 2&3	75	101
Acute Specialty	873	748
Sub Acute	18	151
G&A Sub Total	**1,020**	**1070**
Patient Hotel/RCDM	18	35
Ambulatory Care	60	108
Total Beds	**1,098**	**1,213**

The distribution of beds across the new hospital is detailed in **Appendix 6B**.

Within the new build, each 36 bedded ward will have 16 beds in single rooms. Additional single rooms in the assessment unit, ambulatory care, critical care and the patient hotel will bring the total to 491 in the new hospital.

The 151 sub-acute beds planned were agreed at OBC and recognise that many patients have a more streamlined and sophisticated model of care after their initial acute phase. These beds are therefore assumed to be staffed with a lower skill-mix and are therefore more cost-

effective. In reality, however, both the acute and sub-acute beds can be used flexibly to meet peaks and troughs in demand.

The 60 beds to be provided in intermediate care in the community recognise that some patients in the future will not need to be admitted to an acute or sub-acute setting. The intermediate care beds can also be used to facilitate early discharge in cases where patient dependency is relatively low. This is, primarily, a matter for the PCT and they are currently working on the best balance of community and intermediate care facilities.

In addition to the 1,213 beds planned for daily use, a further 18 unstaffed beds will be provided for decant purposes bringing the total beds in the scheme to **1,231**.

Of the **1,231** beds to be included in the new development, 1001 relate to the reprovision of current activity, which currently consumes 1092 beds, representing an efficiency saving of just under 9% despite the significant improvement in occupancy. The additional beds are for:

- Trend growth 81 beds
- Specific Growth Cases 85 beds
- RCDM 34 beds
- Private 12 beds

6.2.4 Income Projections

An analysis showing the projections of activity and income from 2004 to 2012 in provided at **Appendix 6F**.

6.2.5 Historical Perspective

The bed numbers have been continually reviewed throughout the development of the business case as projections are adjusted to take account of new information and emerging policy guidance. The consequent change in bed numbers between SOC and FBC is shown in the following table.

Table 6-5: Change in Bed Numbers (SOC to FBC)

Bed Type	SOC	OBC	FBC
Acute	804	909	919
Sub acute on site	150	162	151
G&A Sub Total	**954**	**1,071**	**1,070**
Patient Hotel	6	22	35
Ambulatory Care	68	93	108
Total Beds	**1,028**	**1,185**	**1,213**
Intermediate Care off site	100	100	60

These bed numbers have been agreed between commissioner and provider over a series of reviews which are rehearsed briefly in **Appendix 6A**. It should be noted, however, that the 60 community intermediate care beds are most likely to be reprovided in the form of community based services rather than in the form of physical beds.

6.2.6 FBC Addendum – Final Adjustment to bed numbers

Just prior to FBC approval, it was agreed to suspend the development of 108 ward beds in order to achieve a demonstrably affordable business case (see Appendix 9I). The capacity will still be provided in shell accommodation but the wards will only be brought on-line when it is clear that the activity projected is flowing into the Trust. The three ward development is subject to a contract variation which needs to be exercised with 18 months of financial close.

6.2.7 Theatres and Procedure Rooms

The following table provides a breakdown of theatres and procedure rooms required to meet the activity projections.

Table 6-6: Comparative Theatre Numbers

Theatre Type	2001	2011
Emergency & CEPOD		5
Ambulatory		7
Elective		18
Total Theatres	**23**	**30**
Ambulatory Procedure Rooms	3	3

Note: the 2001 theatres were not designated

The Trust currently operates on over 1,300 patients per month in 24 theatres. In-hours utilisation is about 70% with about 10% utilisation of overrun hours. Cancellation rates vary considerably across different specialties. Existing theatres are not separately classified. However, in the New Hospital, it is proposed to segregate the streams of theatre activity into Confidential Enquiry into Peri-Operative Deaths (CEPOD), Urgent, Ambulatory, Elective (normal sessions) and Elective (long sessions), and to resource them accordingly.

The FBC modelling has been based on 8 hour working days, which approximates to two sessions. It is predicted that the Trust would need 30 theatres to undertake the proposed 2011 workloads using this assumption.

Staffing levels for the 30 Theatres have been calculated on the following basis:

Table 6-7: Theatre Availability

	Hours Per Day	Days Per Week	Weeks Per Year	No. of Theatres
CEPOD	24	7	52	1
Emergency	16.5	5	50	4
Ambulatory	10	5	50	2
Ambulatory	8	5	50	5
Elective	10	5	50	10
Elective	8	5	50	8

If a greater than expected level of growth is experienced, it would be possible to extend the working day to 10 hours in all theatres, effectively providing 25% more capacity.

6.2.8 Imaging Rooms

The following table provides a breakdown of imaging and clinical physics rooms required to meet the activity projections.

Table 6-8: Comparative Imaging and Clinical Physics Room Numbers

Category	2001	2011	
		Trust	RCDM
Plain Film	11	10	
Angiography Rooms	3	5	
CT Scanners	3	6	1
Ultrasound Rooms	7	8	1
MRI Scanners	2	5	1
Mammography Rooms	2	2	
Fluroscopy Rooms	5	6	
IVU	2	2	
Bone Densitometry	1	2	
Other Rooms	5	3	
Total Rooms	**41**	**49**	**3**

The RCDM machines will not be used to diagnose/treat civilian patients; they will be used solely for military tertiary activity and research.

Included in the figures are two mammography and one general ultrasound machines, which will be provided at the Birmingham Women's Hospital, to meet the needs of breast care patients.

6.2.9 Clinical Support Rooms

The following table provides a breakdown of clinical support rooms required:

Table 6-9: Clinical Support Room Numbers

Category	2001	2011
Cardiac invasive	2	4
Cardiac non-invasive	10	12
Endoscopy	6	6
Lung investigation	11	9
Other	31	22
Total Rooms	**60**	**53**

Endoscopy procedures for inpatients are not recorded in PAS as separate episodes of care and many endoscopies are also recorded as outpatient attendances. The trust actually performs over 12,000 endoscopies annually but only around half this number are specifically recorded as day cases. The clinic rooms available for endoscopy therefore represent the capacity required to undertake all the endoscopy activity in the future, however it is recorded. Although endoscopies are set to increase (by 2000 per annum in 2011) consolidation of the facilities will result in greater efficiencies so no overall increase in capacity has been planned.

The 2001 figure (60) represents physical rooms within existing facilities, which are in part shared between patient-related activity and other forms of activity such as analysis of results and administrative functions.

The 2011 figure (53) for the new hospital has been derived from an exercise designed to review the clinical support facilities in totality. The number planned for the new hospital represents the capacity required to facilitate efficient throughput and optimal utilisation of modalities exclusively for patient-related activity.

6.2.10 Outpatient Clinic Rooms

The following table provides a breakdown of consultation, examination and nursing and therapy rooms required to meet the activity projections.

Table 6-10: Outpatient Room Numbers

Category	2001	2011
Consult/Exam Rooms	112	131
Nursing & Therapy Rooms	71	29
Total Rooms	**183**	**160**

Even after allowing for projected increases in activity there will be a reduction in the total number of rooms. This will be achieved primarily by developing generic consultation/examination rooms under the new clinical aggregations. This represents a significant change in practice from dedicated specialty/consultant-specific usage of many of the rooms at present.

Currently, nursing and therapy rooms are generally not dedicated and are poorly utilised. The significant reduction in these rooms is also partly explained by the reprovision of some of this capacity within the new Consultation/Examination rooms as part of a multi-disciplinary, integrated one-stop approach to outpatient care.

In addition, the rationalisation of services onto one site will remove duplication in some clinical areas, particularly where there are currently low levels of patient-centred activity at certain times during the working week.

Both of these factors will contribute to improved and increased utilisation of patient-related rooms and the adoption of new, leading edge scheduling systems will bring further efficiencies to all outpatient areas. For example, it is envisaged that increases in booked admissions will link with outpatient scheduling for activities such as pre-admission screening.

6.3 Spatial Requirements

The total existing footprint of the Queen Elizabeth and Selly Oak Hospitals combined is 138,000 m^2.

The following table provides a comparative analysis of the required area of the new facilities.

Table 6-11: Comparative Building Area

2001 (m^2)	20011 (m^2)				
	Base	NHS Growth	RCDM	Clinical Sciences	Total
138,000	119,540	6,643	5,857	7,913	139,953

Note: The Clinical Sciences building will be funded by the University of Birmingham

The spatial requirements for the new facility are very similar to the existing available area (as measured in m^2) across the two hospital sites – even allowing for increased beds (particularly single, en-suite rooms), theatres and clinical support rooms, and research, training and education accommodation. This clearly demonstrates the functional and spatial inadequacies of the existing estate, and the special efficiency incorporated into the future proposals.

6.4 Future Requirements – Mental Health

6.4.1 Future Facilities Requirements

Defining the right number of beds for a mental health service is complex however, there are principal determinants of demand for mental health services do exist. The demand is made up of a number of different perspectives. The approach taken in the OBC considered the following areas:

- Epidemiological evidence on the prevalence of mental illness in the population.
- Socio-demographic characteristics of the population.
- Current trends of activity to estimate service need.
- Application of deprivation weighting to the predicted service need.
- The service system/model in place.

6.5 Future Bed Projections

6.5.1 Assumptions

The key assumptions made in sizing future facilities are listed in the table below:

Table 6-12: Key Planning Assumptions

Service	Key Assumption
Adults	No isolated wards – minimum of 2 wards in a locality to enable cross-cover and women only provision; Ward size of 15 - 18 beds per ward; Provision of single sex accommodation & women only space; More efficient bed management; and Impact of Home Treatment and Respite/Crisis Resolution services on admissions.
Older Peoples Service	Separate building on a health campus. Provide in-patient beds on a like for like basis as: - occupancy levels lie between 83% - 90%. - strengthen community services to meet any increases in demand; and Further development of community services will absorb any increase in demand.
Specialty Services	Separate specialties building with purpose built units for each speciality. Provide in-patient beds on a like for like ; and Monitor development of these services in line with recommendations of Specialties Service Review Group.

6.5.2 Total QEPH Bed Projections

Applying the above assumptions gives the following capacity projections:

Table 6-13: Summary of Capacity Projections

	Total bed reprovision		Adult Acute Treatment Places	
Service	**Current**	**2006/7 (planned)**	**Existing**	**PCT Support**
Adult- Acute	90	96	24	87
PICU	10	10		
Older People	63	63		
Specialties	34	34		
Total	**197**	**203**	**24**	**87**
Increase in provision		6		63

The table below shows an arithmetic projection of adult acute activity in the South Sector of BSMHT to 2010/11, the fifth year of operation. The predicted impact of Home Treatment

Team, Crisis Resolution and Respite Care services are also shown together with assumptions of improved efficiencies within an integrated 'whole system' service.

Table 6-14: Projection of Adult Activity (OBDs) to 2010/11

Year	Planned//Actual OBDs	Beds Required at 100% Occ	Impact of Community Services	Impact of Improved Efficiency	Planned/ Actual Beds	Occ %
02/03	38,646	106	N/A	N/A	90	
03/04	39,693	109	N/A	N/A	90	
04/05	40,438	111	-	-	90	123
05/06	41,599	115	15% (18)	5% (7)	90	100
06/07	42,810	118	15% (18)	8% (9)	96	95
07/08	43,728	120	18% (21)	10% (12)	96	90
08/09	44,680	122	23% (28)	10% (12)	96	85
09/10	45,653	125	25% (31)	10% (12)	96	85
10/11	46,647	128	27% (34)	10% (12)	96	85

Projections have been based on the following planning assumptions:

- Occupancy Levels to reduce from 120% to 85%. The Trust currently runs at an occupancy level in excess of 100%, a figure which is typical for mental health Trusts and compares favourably with performance in the north of the city. The introduction of alternative treatment places and the single management of acute beds and treatment places should enable the Trust to reduce this to 85% by 2008/9, when the new single system of care will be fully established. (The 120% occupancy level is a consequence of patients who are on leave from the hospital are still included in the OBD count.)
- Impact of community developments will increase incrementally by upto 30%. The Trust started to phase in its community developments in 2001/2 when a limited 'pilot scheme' was established in Sparkhill. Research evidence indicates that the impact on hospital admissions when the whole system is fully operational is 30% or more. The assumption is that the service will experience an impact of 15% (reduction in pressure) by 2005/6, which will increase to 27% by 2010/11. [The Sainsbury Centre for Mental Health carried out an evaluation of the Small Heath service in NBMHT, which demonstrated a reduction of 45% on admissions (NBMHT FBC, page 25). This is supported by BHA report 'Quantifying Needs', Kisely,S – which estimates a reduction of 24% on admissions and also the Evaluation of the Bradford Home treatment Service – a sustained reduction of 25%]
- Improved efficiency improved discharge planning reducing ALOS and a reduction in inappropriate admissions. The introduction of an inpatient care pathway will result in better clinical outcomes, which is calculated as being between 5% to a maximum of 10%.

The DH Report The *National Service Framework for Mental Health – Five Years On* (December 2004) found that nationally, the number of acute beds has fallen, so have the number of admissions which suggests that alternatives to acute admission do have a positive effect.

Overall, the Trust believes that a new adult inpatient service (a total of 96 beds) would be the optimum acute bed capacity. This figure is supported by applying Mental Illness Needs Index (MINI) to the expected demographic profile of the local population. The Trust has considered a number of contingencies should the activity projects not materialise and these are set out in Chapter 18 of this FBC.

The projected bed and capacity modelling to 2015/16 is set out in the table below. This demonstrates that the impact of community Services would have exceeded the planning assumptions and, in reality, it is more likely that bed occupancy would have risen.

Table 6-16: Mental Health Long Term Bed Projections

Year	Planned/Actual OBDs	Beds Required at 100% Occ	Impact of Community Services	Impact of Improved Efficiency	Planned/Actual Beds	Occ %
15/16	51,952	142	34% (48)	10% (12)	96	85

Other factors for consideration, in respect to future capacity, include the ability to replicate the Locality Model into other geographical areas and also total capacity across all of the Trust's Sectors.

6.5.3 Acute Treatment Beds/Places

As Crisis Resolution/Home Treatment and Respite places are direct alternatives to hospital admission and NHS Plan Priorities, the planned total number of adult acute treatment places = 183 (excluding Intensive Care). This is an increase of 6 acute beds and development of 87 acute treatment places.

The full range of acute treatment places that will be in place by 2004/5 are summarised in the table below:

Table 6-17: Projection of Acute Treatment Places Requirements

Locality Team	In-patient beds (planned)	Home Treatment Min 20 – Max 30	Respite	Total
East	32	20	4	56
South West	]	25	4	]
South East	]64	30	4	]127
Total	**96**	**75**	**12**	**183**

Respite provision will be developed to suit individual care needs, eg, women only.

The Trust will be introducing a total of 87 new acute treatment places (75 home treatment and 12 respite). This additional community-based provision will meet expected needs. The actual impact of introducing community-based services will be reviewed on an on going basis once the Teams are established and adjustments made over a period of time if required.

Evidence from the HoB Home Treatment Team, which became operational in 2001 demonstrated that, in the first three years of operation the reliance on admissions reduced as assumed. In the fourth year (2003/04) admissions are beginning to rise but this increase may be attributable to a number of factors:

- A lack on consistent medical cover reduced the effectiveness of the team in managing patients within the community (5 Locum Consultants);
- Organisational change through merger led to an initial lack of clarity and within the wider Community Services as roles and responsibilities were defined;
- PCT catchment area changes around the boundaries led to an influx of new patients who were previously unknown to the team; and
- An influx of migrants and refugees into the Sparkhill area.

There is now a substantive Consultant in post and the evidence is suggesting that the Team is now beginning to work more cohesively and admission rates are reversing.

The table below shows the number of Home Treatment Contacts, by team, from 2001/02 to 2004/05:

Table 6-18: Home Treatment Centre					
Team	**2001/02**	**2002/03**	**2003/04**	**2004/05**	**Total**
South East		4	634	7,113	**7,751**
South West	1	974	7,566	6,777	**15,318**
HoB	2,791	5,605	5,203	3,651	**17,250**
Total	**2,792**	**6,583**	**13,403**	**17,541**	**40,319**

6.5.4 Planning Assumptions for Older People Integrated locality system and bed requirements

The Trust's Older People Service has reviewed/analysed its future requirements for assessment beds and is confident that any future planning is based on the following:

The current capacity of 63 beds is the appropriate requirement for the South Sector. This will remain the case with the current investment in enhancing the existing community services. Whilst the current inpatient activity is broadly stable year on year, it is recognised that the demand for admissions will increase as the aging population increases. Current occupancy is 84%.

In the OBC services for elderly people were to be re-provided on a like for like basis. Taking account of the known demographic changes, there will be a 3% increase in the number of people over the age of 70 by the end of the decade, an increase in demand for inpatient services may be expected and this is projected in the table below:

Table 6-19: Demand for Mental Health Inpatients		
Year	**OBDs**	**Occupancy %**
2004/05	19,202	84
2005/06	19,394	84
2006/07	19,685	86
2007/08	19,980	87
2008/09	20,280	89
2009/10	20,584	89
2010/11	20,893	90

The increase in the level of occupancy over time is deemed to be clinically acceptable since the service is moving from one with a number of multiple bedrooms which introduces an element of inflexibility, to one almost entirely with single bedrooms with en-suite facilities.

The Trust expects that activity will remain broadly constant there after however, the age profile of those people who are admitted into the service for inpatient treatment will increase, reflected the fact that people are living longer into their old age. Activity in 2015/16 is therefore projected to be around 21,000 OBDs.

The Trust's strategy which is underpinned by the NSF for Older People is to continue to sustain and strengthen its community services.

Future demand for Older People services will require a continued emphasis on the provision of community services which will necessitate sustaining current services and further investment in respite and rehabilitation beds within localities.

6.5.5 Planning Assumptions for Specialities Inpatient Services

Specialities Inpatient services (Deaf, Eating Disorders and Mother and Baby) are to be re-provided on a like for like basis as part of the BNHP. Activity over the previous 5 years has remained broadly consistent and it is assumed that the Birmingham services will continue at this level.

The table below sets out historical activity (OBDs) for these services with projected activity in 2010/11 and 2015/16.

Table 6-20: Specialties Historical Activity

Service	2000/01	2003/04	2006/07	2010/11	2015/16
Deaf Service	3,728	3,937	3,650	3,650	3,650
Eating Disorders	2,662	2,491	2,555	2,555	2,555
Mother and Baby	3,294	3,160	3,103	3,103	3,103

It is not intended to increase beds in Birmingham and that any future capacity would be developed in other population centres, within the midlands region, supported by the Birmingham service.

6.6 Mental Health Transition Plan

6.6.1 Moseley Hall Hospital and Older Adult Mental Health Service

The re-provision of services located within QEPH includes Older Adult Mental Health Services for south Birmingham. This comprises 63 in-patient beds and associated services and office infrastructure.

It is planned to develop these services within the grounds of Moseley Hall Hospital, a site owned and occupied by South Birmingham PCT.

All mental health services must be relocated from Queen Elizabeth Psychiatric Hospital by June 2008 in order to meet the overall project programme.

Planning permission for this development was granted on December 22, 2004 and a claim for Judicial Review of that decision was lodged against Birmingham City Council by local residents on March 18, 2005.

Counsel advice to Birmingham City Council (BCC) was that one of the grounds of the claim had substance, namely that BCC should have issued a formal ‘screening opinion’ that an Environmental Impact Assessment was not required.

As a result a fresh application was submitted in July 2005. This was substantially the same as the original and a request for a screening opinion was lodged with the application.

The impact of the claim for Judicial Review is:

a) Planning permission for Moseley Hall would not be secured until the end of November or early December 2005, assuming a positive determination by Birmingham City Council plus the statutory 3 month Judicial Review period and time to rebut any subsequent claim.

b) There would be a delay in the start of enabling and construction work, adding a minimum of 6 months to the programme. The BNH JV took the decision to freeze development work on the Moseley Hall Scheme in August 2005 pending BSMHT serving a Moseley Hall Variation Notice in accordance with the procedure in Schedule 44 of the Project Agreement. This process will add further time to the programme for the Moseley Hall element of the project.

c) Under the PFI, Moseley Hall will be funded by a variation bond to ensure that Financial Close is not impeded by the lack of secure planning permission.

d) A decant plan has been prepared to take into account the delayed construction start. This will enable the vacation of QEPH to take place as planned at the end of June 2008 and in compliance with the overall project programme.

e) The decant plan is joint between UHBFT and BSMHT and has been approved by Birmingham and Black Country Strategic Health Authority.

6.6.2 Decant Plan

Older Adult Services for south Birmingham that require decanting are as follows:

- In-patient – 63 beds
  - 42 functional (ie includes depression, retirement etc)
  - 21 organic (ie for dementia including Alzheimers disease)
- Day Hospital – 25 places
- Outpatients
- Therapy services (occupational health, physiotherapy, psychology)
- Associated support services
- Administrative/Management support

The agreed solution is summarised below:

Table 6-21: Agreed Older Persons Mental Health Decant Solution

Element	Recommended location
In-patient (63 beds)	Selly Oak E Block (40) + BSMHT (south sector 23)
Outpatients	Use centralized outpatients in new Specialties building
Day Hospital	BSMHT current estate
Therapies	BSMHT current estate
Support Services	BSMHT current estate

This solution meets the criteria for clinical viability and will cost £1 million to implement. This cost has not been factored into the economic appraisal but is considered not to have a material impact. The precise funding arrangements for the decant costs will be agreed between the two trusts in due course. A summary of the appraisal supporting this decision can be found at **Appendix 6D**.

6.7 Design

As part of the process of attaining planning permission, a number of overarching design principles for the new development were agreed with Birmingham City Council. These ensured that the design incorporated:

- A single site acute facility in the north of the Queen Elizabeth Campus to replace the existing Queen Elizabeth Hospital & Selly Oak Hospitals.
- New mental health facilities based on 3 sites to replace the existing Queen Elizabeth Psychiatric Hospital, one of which is based in the south of the Queen Elizabeth site.
- Efficient progress of patients through the buildings
- The need to provide a spatially flexible building fit for clinical purpose.

In line with these principles, and the agreed FITN document, the PSC design meets the core requirements of Landmark Buildings and surroundings and reflects the international quality of services rendered. In addition, the design incorporates the use of high quality, readily maintainable, long life materials.

6.8 PSC Project Plan

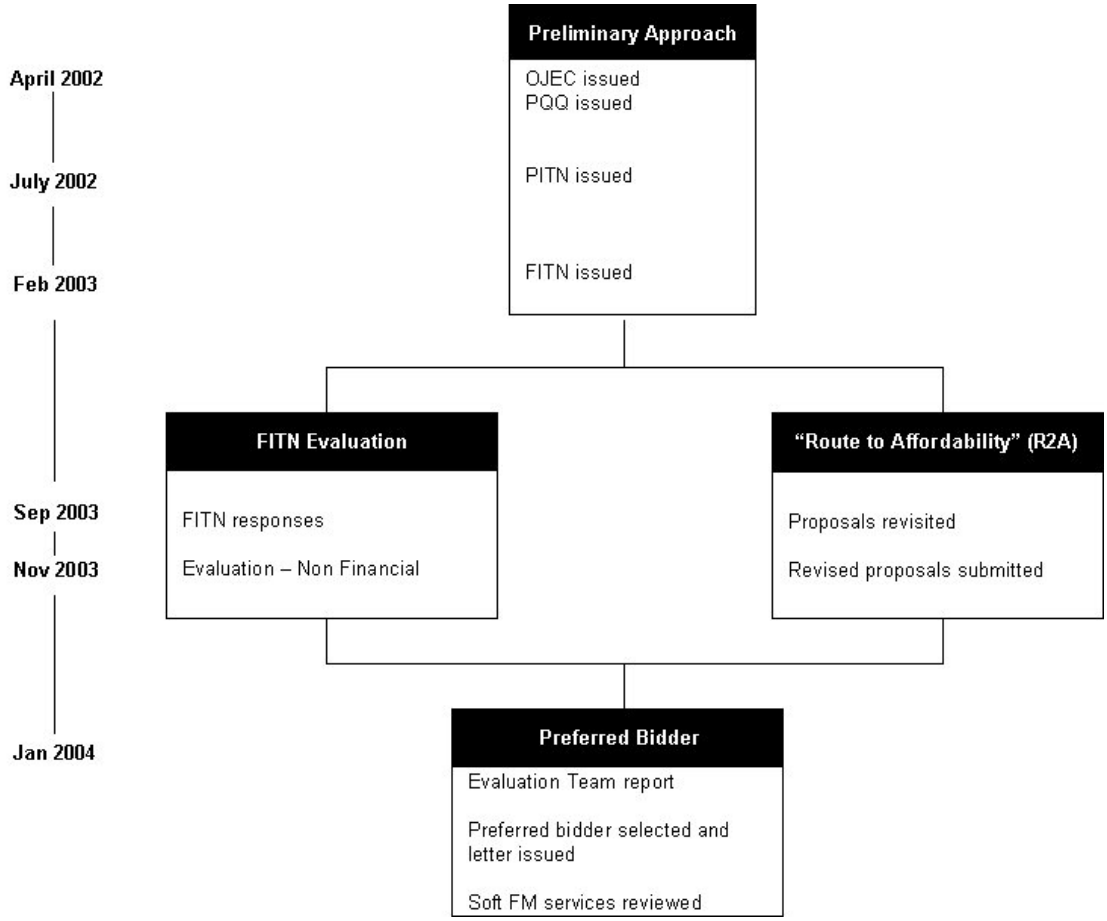
The proposed implementation plan for the Public Sector Comparator scheme would have seen a start on site in February 2006 and final completion in April 2011. The full construction timetable is provided at **Appendix E**.

PFI PROCUREMENT PROCESS

7.1 Introduction

This Chapter sets out the process which the Trusts have followed in securing a preferred PFI partner and summarises the outcomes of the appraisals undertaken at each stage of the procurement process. The procurement process itself was divided into a number of key stages as shown in the diagram below:

Figure 7-1: Summary of Procurement Process



The process followed by the Trusts involved a slight departure from the norm to allow some key affordability issues to be addressed while ensuring that the overall timetable for the project was not affected. The mechanics and outcomes of this process are explained more fully in section 7-4.

The Trusts are nevertheless able to demonstrate that:

- The PFI Procurement Process has been well managed in full accordance with EU procurement rules and Government guidance
- Specifically, the Trusts have taken advice throughout the project in relation to compliance with the Public Services Contract Regulations 1993. That advice has covered the following issues: drafting the OJEC notice for the project; the removal of soft FM services from the project scope; and devising a framework (and scoring system) used to evaluate PITN and FITN submissions.
- The entire process has been extensively audited internally and externally at each key stage of the process and judged to be completely robust
- Appropriate consultation has been undertaken within and outside the Trusts

A copy of the main external auditors' final report and a letter confirming the procurement process was legally compliant can be found at **Appendices 7A and 7B** respectively.

7.2 Appointment of Advisory Team

In recognition of the various complexities of this Project (ie, the two-Trust procurement, the inclusion of RCDM and University of Birmingham facilities, land acquisition for three sites, site and planning constraints and the legal provision requirements) the Trusts appointed an appropriate advisory team to assist on various aspects of the procurement.

Table 7-1: Trusts' Advisory Team

Specialism	Advisory Team	Telephone Number
Legal (Main Project)	Pinsent Mason	0113 294 5207
Legal (Land Purchase - prior to FITN)	Bevan Ashcroft	0870 194 1000
Financial	PricewaterhouseCoopers	0207 213 3914
Insurance	Willis Ltd	0870 607 0037
Technical	Seymour, Harris, Keppie (Architectural)	0121 454 4571
	Design Buro (Architectural - Mental Health)	02476 40777
	Davis Langdon LLP (QS)	01223 351258
	Mott Macdonald (M&E and Civils)	0121 237 4000
	Babties -Jacob's (Environmental)	0118 980 1555
	Halcrow Group (Traffic Impact Assessment (and Traffic & Transport Issues)	0121 456 2345
	Enviros (Energy Strategy)	01743 284 800
	AYH (Enabling Works)	0121 607 2153
	KKaP (Programming)	07802 439075
	University of Birmingham (Archaeology)	0121 414 3539
Facilities Management	Davis Langdon LLP	0141 204 0066
ICT	Secta	0121 233 2000
Clinical Planning	RKW	0207 486 0434

All members of the Advisory Team were selected on the basis initially of open competition, with regular reviews of fee rates for each stage. With the exception of insurance advice, the appointments were undertaken under EU procurement rules.

7.3 Evaluation of the Bidders - Summary

From the initial placement of the OJEC advertisement on 8 April 2002, the Project Team followed PFU guidance to reduce the prospective bidders from four to one as summarised below:

Figure 7-2: Selection of Preferred Bidder

Stage	Interested Parties/Bidders			
Pre-Qualification	Consort	Catalyst	The Hospital Company	Getinge - UK
PITN	Consort	Catalyst	The Hospital Company	
FITN	Consort	Catalyst		
Preferred Bidder	Consort			

At each stage, unsuccessful bidders were thoroughly debriefed. Dates of the debriefing sessions were as follows:

PITN	Consort Healthcare	Thursday 6 January 2003
	Catalyst Healthcare	Tuesday 11 February 2003
	The Hospital Company	Thursday 13 February 2003
FITN	Catalyst Healthcare	Wednesday 11 February 2004

In addition, some minor changes to consortia were agreed by the trusts after a PQQ evaluation of the new entrants. These changes were made according to the prevailing guidance and ratified by the trust boards. New entrants were found to score adequately against the PQQ criteria and the trusts considered that the changes did not pose a risk to the proposed bidders' tender.

A stage by stage breakdown of the process together with the key issues and results of each evaluation is provided in the section below.

7.4 PFI Procurement Process and Evaluation - Stage by Stage

Apr 2002 **OJEC and PQQ Issued**

The advert placed in the Official Journal of the European Community solicited responses from four interested parties:

- Catalyst Healthcare
- Consort Healthcare
- The Hospital Company
- Getinge UK Ltd

Getinge UK Ltd had only responded to one requirement - equipment - and therefore did not meet the pre-qualification criteria. The other three parties were approved to proceed to the detailed evaluation stage.

The Trusts then issued the Memorandum of Information (MOI) and Pre-Qualification Questionnaire (PQQ) allowing 20 days to respond.

May 2002 **Initial Evaluation of Pre-Qualification Submissions**

The preliminary evaluation aimed to remove from the evaluation exercise any candidates that clearly failed on any of the key criteria. These primarily involved the adequate provision of information on finances, experience, core skills in construction and engineering, and facilities management (FM) services, availability of key roles, size and turnover and legal eligibility.

May 2002 **Detailed Evaluation of Pre-Qualification Submissions**

The detailed evaluation was based on the technical capacity and financial and economic standing of the candidates.

However, while each candidate was expected to demonstrate that they were financially capable of undertaking the PFI Project, as reflected by "good" or "satisfactory" ratings against the appropriate criteria, the prime driver in selecting (up to three) candidates to proceed to the next stage was the technical score.

Following a series of separate evaluations against individual criteria, the overall rankings of the three remaining candidates were as follows:

Table 7-2: PQQ Ranking of Candidates			
	Catalyst	**Consort**	**The Hospital Co.**
General	1	2 =	2 =
Design & Technical	2	3	1
Facilities Management & Equipment	2	3	1
Finance Advisors	3	2	1
Legal Advisors	2	3	1
I&CT Advisors	1	2	3
Financial Capacity of Consortia	3	1 =	1 =
Overall Rank	**2**	**3**	**1**

In summary, all three candidates were judged to have the financial and technical capacity and capability to undertaken a project of this size and complexity.

The PQQ rankings of the three candidates were as follows:

1 The Hospital Company

2 Catalyst Healthcare

3 Consort Healthcare

Getinge UK Ltd failed to meet the basic criteria at preliminary evaluation stage and were consequently rejected.

July 2002 **PITN Issued**

Preliminary Invitations to Negotiate (PITNs) were issued to all three candidates with two months to respond.

Sept 2002 **PITN Evaluation**

Having established that none of the bidders had disqualified themselves from the process by fundamental non-conformity, a preliminary evaluation of the PITN responses was conducted. This is summarised in **Appendix 7C**.

The evaluation was very thorough but proved to be inconclusive, with all three bidders achieving similar overall scores, including project management, finance and legals. However, the exercise did expose a number of issues and risks relating to the designs. Further evaluation work was therefore undertaken to clarify parts of the design and layout intentions of each bidder.

Eight additional questions were issued to the bidders seeking clarifications of elements of their proposals. All the questions related to the design and construction but were not identical in their entirety because of the individual nature of the clarification being requested.

The subsequent responses were evaluated and are summarised below:

Table 7-3: PITN Scoring of Responses to Clarification Questions

		Catalyst Healthcare		Consort Healthcare		Hospital Company	
Question	**Weight**	**Score**	**Total**	**Score**	**Total**	**Score**	**Total**
1 Resource planning	8	6	4.8	7	5.6	8	6.4
2 Expansion strategy	20	9	18.0	6	12.0	3	6.0
3 Planning regs	12	7	8.4	6	7.2	2	2.4
4 Models of care	12	4	4.8	6	7.2	5	6.0
5 Privacy and dignity	12	8	9.6	8	9.6	5	6.0
6 Site planning	12	6	7.2	5	6.0	3	3.6
7 MH layout	12	7	8.4	5	6.0	3	3.6
8 Safe movement	12	7	8.4	7	8.4	6	7.2
Rounded Total	**100**		**70**		**62**		**41**

After scoring the clarification response, both Catalyst and Consort improved their positions due particularly to their approach to expansion of acute facilities, privacy and dignity and planning regulations.

Although The Hospital Company strengthened their position with respect to resource planning, by scheduling the full resources they needed to complete the project, they further exposed their lack of compliance with Town and County planning guidance. Alternative solutions were offered to meet this compliance, which included a thirteen-storey arrangement and a reduced height solution that displaced other services, but without being clear about their relocation. Their solution also incorporated a re-siting of the Mental Health facilities. None of these alternatives met with the requirements and would have carried significant risks of obtaining planning consent. Undertaking the changes also compromised the clinical adjacencies.

In conclusion, the supplementary scores attained (Catalyst 70; Consort 62; Hospital Co. 41) demonstrated sufficient differences to suggest that the Hospital Company could be eliminated at this stage of the process. In addition, separate exercises performed by the Joint Staff Side Committee and Birmingham City Council also suggested that The Hospital Company should be eliminated.

Jan 2003 **PITN Conclusion**

As The Hospital Company had been a fore-runner in the initial (PQQ) stages of the evaluation, further work was undertaken to assess the bidders against five areas of risk, namely:

- General financial risk
- Planning risk
- Clinical adjacencies and operability
- Expansion and flexibility
- Public and staff ownership

This exercise confirmed the relatively low risks of pursuing both the Consort and Catalyst proposals but further exposed the significant risks associated with The Hospital Company.

The Trust's Chief Executive consequently reviewed the available evidence and recommended the elimination of The Hospital Company.

Feb 2003 **FITN Issued**

Final Invitations to Negotiate (FITN) were issued to Consort and Catalyst with four months allowed for a response.

Jun 2003 **Extension of FITN Submission Period**

Although FITNs had been issued, ongoing discussions with commissioners at the time indicated that there were some potential problems with the affordability of the scheme. These discussions explored many options for bringing the scheme back within the affordability envelope required by the commissioners. Some of these options inevitably involved making changes to the output specification that the two bidders were working to in preparing the FITN submissions. It was therefore decided to extend the FITN return period by 3 months (ie, to September 2003) to allow the affordability discussions to continue and to gain purchaser approval.

Sep 2003 **FITN Submission**

Both bidders submitted their primary FITN responses in September 2003. These submissions were subjected to an evaluation based on the framework developed by the Private Finance Unit of the Department of Health.

Oct 2003 **FITN Evaluation**

The evaluation tested the proposals against five areas, namely:

1. Project approach
2. Design of the proposals
3. Facilities management (included equipment, communications and IT)
4. Contract legalities
5. Financial modelling

In addition, the proposals were subjected to the NHS Estate AEDET (Achieving Excellence in Design - Evaluation Toolkit) criteria.

The evaluation process involved five stages of assessment and incorporated reviews of the submissions by a wide range of stakeholders. The results of all these individual assessments were collated giving an overall ranking of each of the bidders as summarised in Table 7-4 below:

Table 7-4: FITN Ranking for Each Section of The Framework

Summary	Weight	Catalyst	Consort
Project Approach	5%	2.6%	3.9%
Design and Construction	39%	23.4%	24.3%
ICT	1%	0.4%	0.5%
Facilities Management	26%	11.7%	13.8%
Equipment	9%	6.9%	3.6%
Legal	10%	2.6%	4.4%
Finance	10%	6.2%	6.4%
Total	**100%**	**53.8%**	**56.7%**

In conclusion, when taking all factors into account, Consort emerged slightly ahead of Catalyst overall but also out-ranked Catalyst in six of the seven sections of the PFU framework.

Oct 2003 **Initiation of "Route to Affordability" (R2A)**

When the Final Invitations to Negotiate (FITN) were submitted, it became clear that both the Catalyst and Consort proposals were significantly outside the affordability envelope required by the commissioners. At this point it was decided to initiate a parallel piece of work to develop new options which would be demonstrably affordable. Both Catalyst and Consort were therefore asked to work up a second set of proposals which would meet this criteria; this process subsequently became known as the "Route to Affordability" (R2A).

Nov 2003 **R2A FITN Submitted**

The initial work on developing affordable solutions lasted just under two months and both bidders submitted revised R2A proposals in November. Subsequently, a number of iterations were performed to optimise the financial strengths of each bid and to ensure that the two proposals were both compatible and comparable. A detailed commentary on this process is provided at **Appendix 7D** and the highlights presented as follows:

- To achieve an affordable scheme, both consortia approached the problem in different ways and offered varied solutions:

Table 7-5: R2A Proposed Changes to Schemes	
Consort	**Catalyst**
Orientation of the new hospital moved 90^0 to facilitate a quicker build. Full utilisation of retained estate including Nuffield House. Amendments to mental health scheme.	Suggested reductions to build quality. More aggressive finance structures.

- The schemes were reduced to hard FM only. The Trust elected to independently pursue solutions for soft FM (domestics, catering and portering), managed voice and data and equipment. This decision was subsequently supported by the development of an in-house costed specification for soft FM which demonstrated considerable savings over the consortia bids. (Note the managed voice and data component has more recently been reinstated into the deal with Consort for the new acute hospital).
- The initial positions of the R2A bids compared to the PSC, and their respective positions after adjustments to achieve comparability, are summarised in the table below:

Table 7-6: Affordability of R2A Submissions

Total R2A Unitary Payment	Consort £m	PSC £m	Gap £m	Catalyst £m	PSC £m	Gap £m
Before adjustments	47.105	46.458	(0.647)	54.627	46.458	(8.169)
After adjustments	50.826	46.358	(4.468)	54.017	46.458	(7.559)

After reviewing the R2A bids - and undertaking discussions with both consortia, it became clear that Consort was much closer to achieving an affordable scheme than Catalyst.

A technical evaluation of the selection process can be found at **Appendix 7E**

Jan 2004 **Preferred Bidder Selected**

In evaluating the original FITN bids, the evaluation team were not party to the progress being made on the R2A bids. Therefore, when the two R2A bids were revealed it was necessary to ensure that the revised schemes did not contain any material difference which would affect the outcome of the original evaluation. The findings of the evaluation team were therefore reviewed line-by-line against the two R2A bids to assure the validity of the evaluation process and consequent results.

Upon completion of this exercise the results and financial projections were reported to the Chief Executives of the two Trusts. Subsequently, it was determined that the preferred bidder emerging from the exercise was Consort and a preferred bidder letter was prepared and sent to Consort before the end of the month. This decision was implemented with the unanimous agreement of the Project Board and both Trust Boards.

The preferred bidder letter is contained at **Appendix 7F**.

Since the appointment of Consort as the preferred bidder there has been one significant change to the consortium with the withdrawal of AWG from PFI projects. Balfour Beatty, who were already in the consortium, subsequently took on the equity and workload of their former partner.

PREFERRED PFI SOLUTION

8.1 Summary

- This Chapter describes in detail the proposals developed by Consort Healthcare to deliver The Birmingham New Hospitals Project. These proposals provide each Trust with the infrastructure and services that respond to, and reflect the Clinical and Non-clinical Output Specifications, and the Trusts' Construction Requirements.
- It sets out details of the Project Company Consort Healthcare (Birmingham) Limited and their principal advisors;
- Commercial aspects of the PFI solution are recorded;
- It describes Consorts' Design Process and Design Quality and references the NHS Design Review Panel;
- Advantages that the Consort designs have over the Trusts' PSC solution are described, as is the overall QEMC Site Master Plan;
- a description of the PFI building solutions for each Trust, including the departmental functional content of the buildings as is the phasing arrangements for the new acute hospital;
- statements on compliance with NHS Estates guidance regarding Consumerism, Sustainability, AEDET and NEAT are included for both Trusts; and
- details of the services that will and will not be delivered as part of the PFI solution are provided including Interim Services.

The Preferred PFI Scheme fully addresses the issues identified as justifying the investment outlined in Chapter 4, 'The Need for Investment'.

8.2 Project Company

Consort Healthcare (Birmingham) Ltd. is the special purpose company and the corporate vehicle for delivering the BNHP over the life of the Concession. The shareholders are: Balfour Beatty Capital Projects Ltd; HSBC Infrastructure Fund Management Ltd; and Royal Bank of Scotland Project Investments Ltd.

Throughout the Project thus far, the following parties have advised Consort:

Table 8-1: Consort's Advisors	
Legal	Tods Murray WS
Financial	Royal Bank of Scotland
Insurance	Marsh
Healthcare Planning	Healthcare Environments Ltd
Lifecycle Costing	EC Harris
Planning Supervisor	Tweeds

Consort appointed a Construction Joint Venture Company comprising Balfour Beatty and Haden Young to manage the Design and Build elements of the scheme. Two Design Teams were appointed each with specialist knowledge in the specific architectural requirements of each service – mental health and acute care – so as to reflect the requirements of each Trust.

The full Consort Organogram is shown in **Appendix 8A**.

8.3 Commercial Considerations

The length of the concession is 40 years including 5 years construction. Except where set out in Chapter 13 (Contract Structure), both Trusts and Consort have adopted the Standard Form Project Agreement Version 3 with amendments for some project specific issues. The University of Birmingham and the Royal Centre for Defence Medicine are not party to the Project Agreement but have individual Service Level Agreements with UHBFT for their respective aspects of the Project.

Consort will design, build, fund and provide Hard FM Services (see Section 8.11) to the Facilities on the QEMC campus, and at Showell Green Lane and Moseley Hall Hospital. Consort has appointed an ICT Provider, Omnetica, to provide a managed voice and data service to UHBFT for a concession period of 12 years. After this period, there will be an option to renew the contract or market test for a new service. The service to BSMHT is for the passive cabling only, which will be provided to a specification that is compatible with other BSMHT voice and data systems. The Trusts In House IM&T staff will design and build the network for the PFI buildings, linking them into the wider BSMHT voice and data network. The Trust issued a Specification for the cabling that is consistent with existing provision elsewhere in the Trust. Works necessary will be undertaken during the commissioning period of 2 months following Phase Completion.

There will be a single Payment Mechanism with two payment streams, one for each Trust. The calibration of the Payment Mechanism is such that there is no perverse incentive for Consort to prioritise Response and Rectification because of the considerable variation in Unitary Payment values between the Trusts.

Default by Birmingham and Solihull Mental Health NHS Trust will not be a factor that could lead to a termination of the Project Agreement. Default by University Hospital Birmingham NHS Foundation Trust will result in the termination of the Project Agreement.

8.4 Consorts' Design Process and Design Quality

Throughout the life of the Project, Consorts' Design Teams have been able to meet directly with large numbers of 'front line' clinicians, service managers, users of mental health services and representatives from Patient Councils to facilitate the design development through the Clinical Review Group process. Consort also ran a number and range of Design Workshops and Exhibitions and gave presentations to many existing Forums and Groups including the Executive Directors and Executive Teams of both Trusts. The Mental Health Trust organised a special Service User Focus Day that allowed a direct interface and dialogue between the Design Team and service users and their Representatives. This successful event was addressed by Lord Hunt of Kings Heath at which he "emphasised the need for the expertise and experience of Service Users to be at the heart of planning and in the design of new facilities" and he ended with a "plea to build for future generations".

The Project has two Design Champions and in each case they are the Chairs of their respective Trust's and they are Chair and Deputy Chair of the Design Developments Advisory Group (DDAG). The role of this group has been to develop a design brief for the Private Sector to work to in developing buildings of civic importance. This group is accountable to the two Trust Boards. As part of these roles, they led a Study Tour across Europe visiting hospitals in Holland, France and Germany, and have attended many Project Events. The two Design Champions also sit on the Plaza Steering Group that is overseeing the Procurement of this important 'gateway' to the new hospital facilities.

In October 2003, during the FITN process Consort presented to the NHS Estates Design Review Panel. The Panel, chaired by Sue Francis from the Centre for Healthcare Architecture and Design, included representatives from both CABE and The Prince's Foundation. A full list of delegates may be found in **Appendix 8B**. The Panel was particularly impressed by the involvement of the Design Champions and Design Advisors and also the level of clinical briefing that was made available for Consort. The Comments and Recommendations were favourable in many cases. They emphasised that there were areas Consort and the Trusts would have continue to work on during both the Route To Affordability and at Preferred

Bidder. The design has continued to develop and evolve during these stages. The particular areas that had been highlighted as requiring attention included patient arrivals, the internal environment and patient journeys. All of these areas have developed since the review as more detailed design has been undertaken.

Tenos, Consort's Fire Consultants, have developed fire strategies in discussion with the Trust's Fire Officers, WMFS and have also Building Control. The Fire Strategy documents are incorporated into the **FBC Annex**.

8.5 Advantages over the PSC

The PSC was developed up to 1:500 block drawings to demonstrate that adjacencies could be achieved and that the buildings could fit on the site. The level of design in the PFI proposals is much more advanced than the PSC. However, in establishing the PSC the Trusts' ensured that the Schedules of Accommodation took full account of the Consumerism agenda including the provision of single bedrooms with en-suite facilities, comfort cooling where appropriate, and that adjacencies were appropriate. Set out below are a number of areas where the PFI solution demonstrates advantages over the PSC.

8.5.1 Integration with the retained estate

Recent capital investment in both buildings and major medical equipment on the QEMC has allowed certain modern buildings to be retained for use as part of the PFI Project. The new build has been sited closer to the clinical components of the retained estate thus reducing the travel distances. Also the inclusion of an elevated link corridor provides a simplified and more direct route between the new Acute Hospital and the Retained Estate. This spans from Level 2 of the Podium entering the Wellcome Building at Level 1.

8.5.2 Dedicated visitor routes to wards

On entering the acute hospital via the Main Entrance the lifts for visitors are immediately identifiable. These provide vertical integration to the visitor realm of the hospital streets that connect the ward towers. For those visitors who know where they need to go there is no need to go further into the hospital.

8.5.3 Separation of public and private areas in the mental health facilities

The design of the buildings in general and in particular Wards and Departments has centred around the philosophy of the '3 P's': 'Public realm'; 'Public/Private areas'; and 'Private spaces'. Through careful design, this philosophy allows for enhanced privacy and dignity for patients whilst not compromising on staff observation.

8.5.4 Zonal FM services delivery (now trust retained)

The Consort design for the new acute hospital demonstrates how, by adopting a Zonal strategy for the delivery of FM services it is able to segregate 'back of house' services from patient and visitor flows. Also, within the Zonal concept it is further possible to segregate clean and dirty FM. The UHBFT Facilities Directorate, as part of the PSC Review (See Section 8.11) undertook a review of the design and will, as part of the ongoing transformation process re-engineer their FM service delivery to fully exploit the Zonal Services Concept.

8.5.5 Helicopter landing pad

The PSC located a Helipad on the roof of the Diagnostic and Treatment building. Whilst this is technically achievable it is an expensive solution. Consort considered a number of possible locations, including on the roof of their buildings however, they believe the optimum solution is on the roof of an adjacent multi-storey Car Park with dedicated lift and access across the circulatory road into the main A&E Entrance.

8.5.6 Phased handover of the acute hospital

Consort working closely with clinicians, has developed a scheme that will allow the new build hospital to be delivered in three main phases and two sub-phases thus allowing the accommodation to commissioned in clinically coherent stages and not a 'big bang' single opening. This has benefits to the Trust not only clinically and operationally but also financially in terms of Affordability.

8.5.7 Temporary Access

Leasow Drive will be used as a temporary construction access by Consort. It is not intended to use it as an access once the mental health scheme is completed.

8.6 Planning Matters

The Trusts' had Outline Planning Consent, granted by Birmingham City Council, for the proposed developments on the QEMC campus and at Showell Green Lane. The responsibility for Full Consent rests with Consort who appointed Turley Associates as Planning Advisors to facilitate that process.

8.6.1 Queen Elizabeth Medical Centre

Application S/04812/04/RES was received by BCC on the 19 July 2004. It was for details, in part, concerning the reserved matters application pursuant to Application No. S/04585/03/OUT.

Full planning consent, with conditions attached, was granted on the 14 October 2004.

8.6.2 Showell Green Lane

Application C/04814/04/FUL was received by BCC on the 19 July 2004. It was for demolition of buildings and erection of part single-story and part two-storey buildings to provide mental health facility and car parking at Showell Green Lane, Former Women's Hospital, Sparkhill, B11 4HL.

Full planning consent, with conditions attached, was granted on the 14 October 2004.

8.6.3 Moseley Hall Hospital

The Moseley Hall scheme received full planning consent in December 2004. A local residents group sought a Judicial Review of the decision and it was found that there were grounds in that the correct procedure had not been followed. In light of this the original application was withdrawn by Consort.

An alternative application (S/04878/05/FUL) was submitted in July 2005 and was approved in December of that year.

The Moseley Hall element of the project remains within the overall PFI scope with the funding being realised as a Variation Bond once the scheme is able to proceed.

Copies of the Planning Approval letters for each application, which include the Conditions, will be provided as part of the **FBC Annex**.

8.7 QEMC Master Plan

Consort developed a Master Plan that took account of the complexities of the QEMC campus whilst meeting the needs of both Trusts and other site users. This plan recognises the needs of site users in terms of site access and circulation, the placement of buildings and major entrances, expansion opportunities and optimal car parking. A site plan is contained in **Appendix 8C**.

8.7.1 Accessibility

The site will be accessible to all sectors of the community and by all modes of transport, with a range of measures to be introduced by the Trusts and Consort to encourage the use of more sustainable means of transport for staff, patients and visitors (The Green Travel Plan). The site benefits from the University Railway Station, which is on the Cross-City Line, providing a frequent local service and also other cross country regional rail services. A Transport Interchange will be developed (by Birmingham City Council) adjacent to the station and this will be the focus for pedestrian arrivals. Consort's proposals for Traffic Management include a 'shuttle bus' service connecting the Transport Interchange with drop-off points at key points around the site.

The 'gateway' to the site is the new Hospital Link Road from the south off the Selly Oak New Road. Circulation is around the perimeter of the site to drop off points and car parks. There are separate Blue Light and Bus and Staff Only access points off Metchley Lane. A re-aligned Vincent Drive gives access from the east as far as the Hospital Link Road roundabout, with access from the west discontinued. Metchley Park Road is effectively closed which will eliminate rat running other than a Bus Gate on leaving the site.

Pedestrian and cycle routes are, where feasible, segregated, and traverse the site along North/South and East/West axes.

8.7.2 The Plaza

A public Plaza will be developed in the area of the Roman fort. The Plaza Project is not part of the PFI scheme but is included as an element of the Section 106 Agreement and will be procured via a traditional process. The Plaza will be funded by the UHBFT Block Capital Programme. However, other funding sources may be pursued – Charitable Funds or the Arts Council. A Master Plan design is agreed in principle by all the key stakeholders which can be constructed within the budget available of £1.25 million. Full planning approval has been granted for the plaza scheme and an application has been submitted to English Heritage for Scheduled Ancient Monument consent. The majority of the land within the Plaza boundary is in the ownership of Birmingham University and the Trust will enter into a joint tenancy agreement with the University upon completion of the scheme.

The Plaza, as well as providing a public open space with an historical context and interpretation, will also provide pedestrian walkways from the Transport Interchange to the Medical School, the Women's Hospital and Retained Estate, the Acute Hospital and, via a downgraded Vincent Drive to the mental health campus to the south.

A variation to the section 106 agreement will mean that there will be no link between the opening of the hospital and the completion of the Plaza as the proposed variation provides that the Plaza works simply need to be complete by a certain date in time. If no meaningful start on the Plaza works has been made 12 months prior to the date the Plaza works are supposed to have been completed, then the Council can draw down from the Plaza bond monies which the Trust would be obligated to put in place.

The Trust will be retaining responsibility and risk for the delivery of the Plaza scheme in the Project Agreement.

8.7.3 Car Parks

Car Parks are located around the site and include both Multi-storey and surface provision. There are dedicated staff Car Parks and then provision for Patient and Visitor parking. The total number of spaces provided in 3,725 which includes 300 spaces for Orange/Blue Badge holders.

A Car Park and Traffic Management service will be provided by Consort's service provider (Q-Park) and it is a Trusts' requirement that all Car Park provision is to the ACPO Secure Car Parks standards. Car Parking charges will be set at levels agreed between the Trusts,

Consort and their Service Provider and will reflect the tariffs associated with the current service and also on similar sites with annual inflationary uplifts.

8.7.4 Helipad

A Helipad is located on top of the large Multi-storey staff Car Park in the north west of the site. A dedicated lift will allow immediate transfer to the Main Entrance of A&E which is located on the northern elevation of the 'new build'.

8.8 A New Acute Hospital

The solution developed for UHBFT is an exciting combination of state-of-the-art new build accommodation and the re-use of elements of the existing estate, which will be refurbished, enhanced and adapted for their new uses. Consort has adopted the notion of a 'healing city', and they intend to create an attractive and uplifting environment, incorporating ideas from other sectors including education, retail and leisure. The new build will be in 3 main phases and two sub-stages to allow the mental health scheme to complete and vacate the existing hospital. Enabling Schemes undertaken by the Trusts, and Advanced Works schemes undertaken by Consort and governed by an Advance Works Agreement, will ensure that the rest of the development site is available when required by the construction programme. Schedule 1 of the Advance Works Agreement, which lists the Advance Works, Advance Design and Trusts' Enabling Works is included in the **FBC Annex**.

In order to support the new Model of Care, Consort recognised a number of "Key Principles of Acute Care" that influenced their designs:

Separation of emergency and planned patient flows:

- Centralisation of clinical support and diagnostic departments;
- A design that reflects the grouping of specialities into aggregations reflecting patient needs;
- Key clinical and functional adjacencies are identified and achieved;
- A design that achieves the desired "elements of care"; and
- Flexibility to facilitate changes in the future.

In creating a scale of building to which people can relate, the mass of the new build has been broken down into distinct elements. These are a Centralised Diagnostic Core with Vertically Stacked In-patient Ward Towers above and the Entrance Building.

Set out below is a table showing the extent of new build accommodation and that to be provided within retained estate.

Table 8-2: Proportion of New Build and Retained Estate

	Consort Design (m^2)	PSC (m^2)
New Build	117,119	115,857
Retained Estate	30,161	30,200
Total	**147,280**	**146,057**

8.8.1 The New Build

This will be developed to the north west of the QEMC campus in front of the Women's Hospital and bounded by Metchley Lane, Vincent Drive and the Roman Fort.

The Main Entrance foyer is at ground level on the eastern elevation, adjacent to the north west corner of the Fort, looking across the Plaza area towards the Transport Interchange. A large, and obvious reception facility will be a feature of this space providing a welcoming and reassuring ambiance for both patients, relatives and other visitors. A 3-storey high Podium Building sits relative to this at Ground floor level, extending to the north, where a rise in level allows a direct access to Accident & Emergency and Acute Assessment which are on the first floor. Other services accommodated in the Podium include Outpatients, Ambulatory Care, Imagining, theatres and Critical Care. A fall in level to the south allows a lower ground floor level which provides accommodation for laboratories, and the main FM Centre and Service Yard. Three ward towers sit, in a linear arrangement over the northern element of Podium Building, linked along their centre line by the hospital street and vertical circulation cores. The towers have an asymmetrical profile with 3 storeys to the south of the street and 5 storeys to the north. They demonstrate a radial elliptical based geometry together with a curving roof profiles which create space for the main ventilation plant halls. Each ward has 36 beds comprising five 4-bedded rooms and sixteen single bedrooms, each with en-suite facilities. Details of the functional content is given in the following table.

Table 8-3: Proposed Functional Content for New Build (Acute)

Level	Functional Content
-1	Clinical Laboratories FM Accommodation Mortuary Plant Areas
0	Entrance Foyer Outpatients Clinical Support & Investigations Ambulatory Care Centre Imaging - In and Outpatients Decontamination Suite
1	Therapies – In and Outpatients Acute Assessment Accident & Emergency Plant Area Education University Research Labs
2	Critical Care Theatres Burns Main Restaurant RCDM Plant Areas
3	Wards 6 x 36 bed wards in pairs Plant Areas
4	Wards 4 x 36 bed wards in pairs (Cardiovascular & Renal) , 1 x 32 bed Stroke Ward and 1 x Acute/Chronic Renal Dialysis) Plant Areas
5	Wards 6 x 36 bed wards in pairs
6	Wards 3 x 36 bed wards Plant Areas
7	Wards 3 x 36 bed wards
8	Plant Areas

The accommodation will be released by Consort in three main phases and two sub-phases thus allowing for operational commissioning to be more manageable. Phase One will allow the services at Selly Oak Hospital to transfer en mass. The detail around the phasing is set out in the next section. It is currently planned that 3 of the wards will be Hard Shelled Accommodation only with an opportunity for UHBFT to instruct the fitting out as an Anticipated Variation.

8.8.2 Phasing Arrangements

A phased handover of accommodation was part of the Consort R2A proposals. Since R2A the Trust has reviewed its' position in respect to phasing and the physical migration into the new building, and there are four key objectives to be achieved:

- an early move of acute services from Selly Oak Hospital, even if this necessitates "double decant" for some services;
- the majority of QEH based services and departments should remain in current facilities for as long as possible, with the exception cardiac services and the retained estate;
- to maintain a clinically coherent hospital at each stage on each site; and
- cross-site working and transition costs are minimised.

Consort's route to affordability submission provided a 3-phase plan for phasing and physical migration programme, over a 14 month period. Consort's RTA bid allowed a 2 month period for Trusts' operational commissioning of services following each handover.

The areas to be release in each of the original Route to Affordability phases can be seen in Figures below:

Figure 8-1: For floors -1 to 2

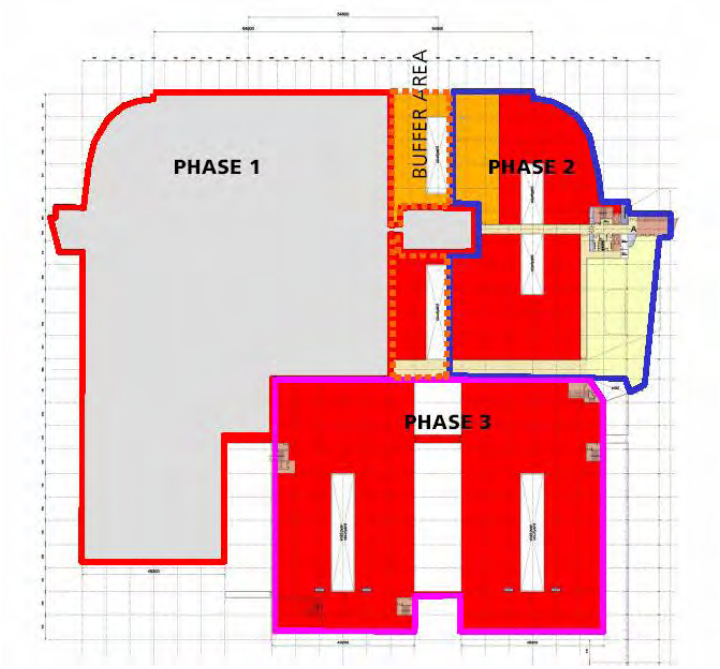
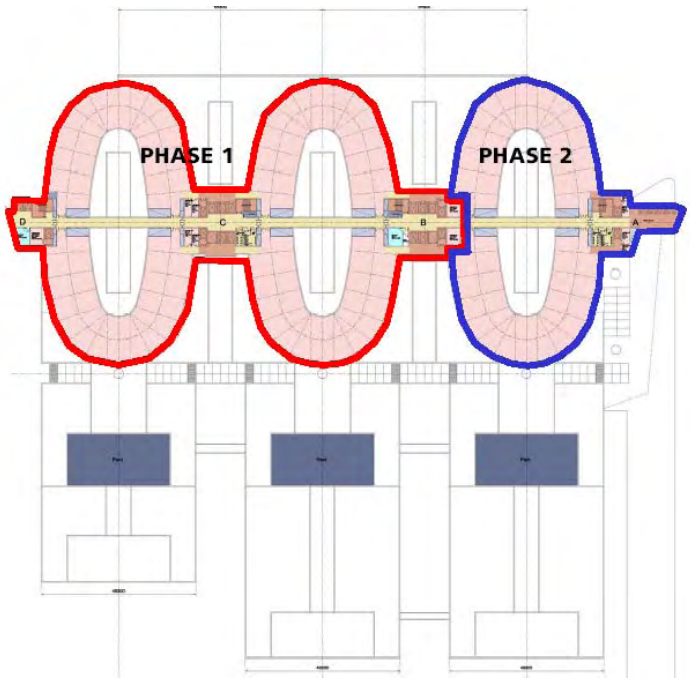


Figure 8-2: Floors 3 to 7



The concept of the 'Buffer Zone' is no longer part of the Construction Requirements.

The table below sets out the proposed release dates for each phase.

Table 8-4: Phasing Release Dates

Phase	Route to Affordability		Position Post Trust Workshops October 2004		Position at FC	
	M^2	Release dates (Financial Close predicted at 01/05)	M^2	Release dates (FC predicted at 01/05)	M^2	Release dates (FC 14/06/06)
1A	n/a				09,000	18/02/2010
1	62,073	December 2008	69,500	December 2008	54,653	15/04/2010
2	29,280	June 2009	30,500	June 2009	28,704	16/09/2010
3A	n/a		n/a		14,762	28/04/2011
3	25,766	February 2010	17,000	February 2010	10,000	10/08/2011

The current proposal is as follows:

Phase 1A - February 2010

- Handover of inpatient and outpatient Imaging, Cardiac Catheter Laboratories and Endoscopy Suites. This will enable the Trust to have all new equipment associated with these areas delivered and technically commissioned.
- University Research Laboratories

Phase 1 – April 2010

- FM Services will move into their accommodation at Level -1 of the Podium including the main Service Yard for goods deliveries.
- Imaging (including Nuclear Medicine), Catheter Laboratories, Coronary Care, Endoscopy and Day Case Surgery will move into Level 0.
- A&E, Acute Assessment (from SOH) and Inpatient Therapies will move into Level 1.
- Critical Care and Theatres (from SOH) as well as the Burns Unit will move into Level 2.
- The Wellcome Critical Care beds and Cardiac Theatres will also move into Level 2.
- Ward Towers 1 and 2 will be available for occupation from Levels 3 to 7 and 3 to 6 respectively. They will accommodate inpatient beds from SOH, QEH Cardiac beds and the Private Patient Unit from the Oncology Centre.
- A temporary Visitor Entrance will be created on the west elevation of the Podium and the 'blue light' ambulance entrance on the north elevation.

Phase 2 – September 2010

- Imaging from the QEH (except that required to support Neuro) and Endoscopy will move into Level 0 of the Podium.
- Critical Care and Theatres (except that required to support Neuro) will move into Level 2 of the Podium.
- Remaining elements of inpatient and outpatient therapies will move into Level 1 of the Podium.
- Level 7 of Ward Tower 2, and Ward Tower 3, with the exception of Level 7, will provide the balance of inpatient beds.

Phase 3A – April 2011

- Histopathology will move into Level -1 of the Podium.
- Outpatient departments from both SOH and QEH will move into Level 0 as will the fracture Clinic and the new Main Entrance.
- Education, with the exception of lecture theatres will move into Level 1
- The balance of the Elective Theatres will occupy Level 2 of the podium.
- The Staff and Visitor Restaurant will occupy Level 2 of the Podium.
- Level 7 of Ward Tower 3 is occupied.

Phase 3 – August 2011

- The RCDM Management Facility will occupy Level 2
- The Lecture Theatres will occupy Level 1.
- The remainder of the Outpatient Department will occupy Level 0.
- Clinical Laboratories and the Mortuary will occupy Level -1.

Retained Estate phasing – August 2012

To availability and occupation of the retained Estate will continue as originally planned.

8.8.3 The Retained Estate

A number of existing buildings on the QEMC campus have been identified by Consort as being capable and worthy for re-use due either to their age i.e. recently constructed or functionality. These retained buildings will be used for both clinical and non-clinical services and the clinical element will be linked into the new Acute Hospital by a high-level bridge. The respective buildings have been designated as being either 'Zone 1' or 'Zone 2' and the treatment in terms of modernisation, refurbishment and the delivery of services is different for each zone.

Zone 1 buildings are generally clinical and include The Victoria/Welcome Building, the Pharmacy Carcass, the Oncology Centre and the Postgraduate Medical Centre. These buildings will be adapted where necessary, generally in accordance with the Trusts Construction requirements, for change of use, and will receive the full Hard FM maintenance service, including lifecycle replacement. They will be subject to the full payment mechanism as in the new build. Subject to any agreed VFM derogations they will be handed over and maintained at Category B Condition. (There will be no works undertaken in the main Radiotherapy treatment areas.) . The Trust will retain responsibility for cost and consequences of latent defects in the building structure and foundations for 12 years from commencement of full services in any particular building.

The Zone 2 buildings are the balance of the Retained Estate and are essentially non-clinical – Nuffield House and the Wolfson Building. It is not considered to represent good VFM for these buildings to be brought up to Category B Condition so instead, the Trust and Consort have agreed an alternative approach whereby Consort will undertake change of use reconfiguration in accordance with specifically tailored scopes and specifications. Consort will then provide a an annual planning survey, statutory testing and a reactive/life cycle maintenance service for all items under £250. The Trust will approve and meet the costs of all reactive maintenance works over £250 and all planned maintenance.

Table 8-5: Proposed Functional Content for Retained Estate (Acute)	
Building	**Functional Content**
Welcome (Victoria) Building (New building commissioned in 2001)	**Ground Floor** – Haemophilia Consultation & Treatment, Patient Trials **First Floor** - Welcome Clinical Research Facilities and Offices as existing. **Second Floor** – Haematology (24 beds), Bone Marrow Transplant (12 beds)
Cancer Centre (New building commissioned in 1999)	**Ground Floor** – Outpatients Department **First Floor** - Day Case Unit **Second Floor** – Inpatient Ward **Third Floor** – Inpatient Ward
Nuffield House (Part of the original 1938 QEH Hospital)	**Lower Ground Floor** – Consort Healthcare Management Offices, Haden General Management, Haden Technical Services **Ground Floor** – Trust Offices, EBME, Medical Illustration **First Floor** – Trust Offices **Second Floor** – Bromley Suite, Patient Hotel, Trust Offices **Third Floor** - Relatives Accommodation **Fourth Floor** – Trust Offices **Fifth Floor** – Trust Offices **Sixth Floor** – Trust Offices
Wolfson Computer Centre (Built 1970)	This building is currently used by the University and UHBFT, principally for computing. No design alterations have been proposed by Consort.
Pharmacy Building (A 1970s extension to the original QEH).	**Ground Floor** – New Lift to all floors, Pharmacy Offices, Pharmacy Stores, RRPPS Calibration and Offices **First Floor** – Oncology Imaging, Nuclear Medicine & Medical Physics Management,, Therapies Assessment, RRPPS Seminar Room **Second Floor** – Pharmacy Manufacturing Dispensary/Clinical Trials, Radio Pharmacy **Third Floor** – RRPPS
Post Graduate Centre	This building provides teaching, seminar and lecture theatres. There are also catering facilities including a restaurant. No design alterations have been proposed by Consort.

8.8.4 Consumerism (Acute)

The matrix shown in **Appendix 8E** summarises the key ways in which Consumerism is addressed within the Acute proposals.

8.8.5 Sustainability and the NHS Environment Assessment Tool (Acute)

Consort's design team, which included ecological, archaeological, landscape, transport and sustainable drainage specialists, ensured that environmental and sustainability remained key issues throughout the design process. Their proposals recognise and acknowledge the NHS Estates concepts, practices and benefits of sustainable development and the overall contribution it can make to improve the quality of life in the UK. Preliminary environmental performance ratings have been undertaken for the scheme so as to provide the design teams with a benchmark. A continuous feedback process has been devised that will allow continuous improvement as design stage continues and into the construction and operational phases.

The current NEAT assessment for the new build element of scheme is set out in the table below.

Table 8-6: NEAT Assessment (Acute)			
Area for Assessment	**Score (%)**	**Weighting**	**Weighted Score**
Management	91	15	13.64
Energy	64	15	9.62
Transport	73	10	7.27
Water	50	5	2.50
Materials	54	5	2.69
Land use/Ecology	70	10	7.00
Internal Environment	82	15	12.35
Pollution	92	10	9.17
Social	67	10	6.67
Operational Waste	100	5	5.00
Total Score			**75.91**

This score gives at NEAT Rating of "Excellent".

The Retained Estate scored 38.29 which is a "Pass".

A 'Sustainable Construction Action Plan' has also been developed and will be implemented throughout the construction phases of the project. It incorporates sections on sustainability, Site Compounds, Car Parking and Traffic Management, Archaeological and Ecological Management Plans and an Environmental Management System. **A copy is included in the FBC Annex.**

8.8.6 Achieving Excellence – Design Evaluation Toolkit (Acute)

The scheme benefited in that the AEDET was published at the time the Trusts were writing the Design and Construction Output Specification. The Specification was structured in such a way so as to facilitate the use of that tool to assess and review design proposals.

The completed AEDET evaluation for the Consort scheme is attached **in the FBC Annex** Although the design has evolved since this was completed, which means that whilst some of the images and layouts are no longer current, the principles, values and aspirations remain valid.

8.9 The Mental Health Trust's Facilities

The solution developed for BSMHT is for four 'landmark' buildings on three sites, each tailored to suite function whilst being sensitive to its' location. Purpose designed facilities will be developed on the land south of Vincent Drive for Specialities Services, together with an Adult Locality Unit serving the South PCT area. This facility will also include a centralised PICU and an ECT suite. The Specialist Building will also accommodate academic accommodation (University of Birmingham Department of Psychiatry), Research and Development, a Library and Facilities Management services. The main staff and visitor restaurant is also located in this building. This site is important in ecological terms and has been designated as a Site of Local Importance for Nature Conservation (SLINC) so it is important that the buildings are sympathetic to, and respect their surroundings. A further Adult Locality Unit will be developed in Sparkhill, serving the Heart of Birmingham PCT area. An Older Adult building will be developed on the Moseley Hall Hospital site which will allow better integration with other older persons' health services already on site.

The designs respond directly to the Trusts' requirements to deliver the new models of care and incorporate best practice guidance, practical inputs from frontline clinical staff and also NHS and other design guidance.

Key Trust requirements - maximisation of natural light and ventilation, ground floor inpatient accommodation and attention to privacy and dignity – are evident in the proposals. Good design practice has been incorporated and this is demonstrated through the following:

- The scale, proportion, aesthetics and materials specified have together created a well balanced design concept so that each of the buildings has its' own identity whilst achieving cohesion across the whole of the scheme;
- A domestic scale has been achieved without compromising the architectural form;
- Three realms of 'public', 'public/private' and 'private' are evident in the ward designs;
- Each building gives direct level access to a range of safe, private and secure external therapy spaces;
- The buildings are user friendly and allow for expansion and adaptability;
- Safety for both staff and patients has been considered in the planning of wards and departments with clear lines of sight; and
- Wayfinding points, artwork and an interior design scheme based on extensive research including emotional mapping and 'sense sensitive' design, are placed throughout the buildings and surrounding areas to define routes both within and between buildings.

All bedrooms, except where the Trust Specification states, are single with en-suite facilities.

The table below sets out the functional content for each of the four building.

Table 8-7: Proposed Functional Content for Mental Health

Location	Functional Content
QEMC Campus	
Adult Building	4x Wards (16 Bedded) PICU (10 Bedded) Activities Space 2 x Home Treatment Teams ECT Suite On Call Accommodation Staff Welfare Space Public/Front of House Space FM Space
Main Entrance & Specialties Building	Deaf Unit (12 Beds) Eating Disorders Unit (10 Beds) Mother and Baby Unit (8 Beds) Multi-faith Centre Neurophysiology](4 Beds) Neuropsychiatry] Outpatients Activities Spaces – Fitness, Physiotherapy Management Offices Department of Psychiatry Library Research & Development Staff and Visitor Restaurant Staff Welfare Facilities Public/Front of House Space FM Hub

Location	Functional Content
Showell Green Lane Adult Locality Building	2 x Wards (16 Bedded) Activities Space Home Treatment Team Community Mental Health Team On Call Accommodation Locality Management Team Staff Welfare Space Faith Centre Public/Front of House Space FM Space
Moseley Hall Hospital Older Adults Building	2 x Functional Wards (21 Bedded) 1 x Organic Ward (21 Bedded) Day Hospital Outpatients Therapies Centre Directorate Management Facilities On Call Accommodation Faith Centre (shared with the PCT) Public/Front of House Space

8.9.1 QEMC

The two distinct buildings on the QEMC campus have been individually designed to fit within, and reflect, the existing landscape to the south of the site in a 'campus'. A key characteristic of this part of the campus is the SLINC which establishes the environmental and ecological context for the development. To the southern edge of the site is the Bournbrook corridor which gives further ecological consideration. Visually and philosophically, the scheme is an extension of the community and merges into the topography of this landscape. The natural fall across the site (of 20 metres) is utilised as the buildings and landscape step down towards the Bournbrook. Existing planting is enhanced to provide a buffer to the adjacent residential neighbours along the western boundary and the hospital link road to the east.

The functional content of the two buildings is listed above. The design of both the South Locality Building and the Specialities Building reflect the models of care that the Trust is working towards, the Clinical Output Specifications, and also the views expressed by clinicians during the design consultation period. The designs reflect NHS and other design guidance and best practice, and the knowledge and experience of a specialist Architectural Practice. The vision is to promote a therapeutic environment for patients which generate a sense of place and purpose, promote safety and security and ensure that the buildings are welcoming and reassuring.

8.9.2 Showell Green Lane

The Showell Green Lane site in located within an urban setting in Sparkhill. It is Consorts belief that by providing a landmark scheme on the site they will be promoting regeneration of the surrounding area. This is applauded by the Trust who regard this as an opportunity to become more integrated into the area, helping to reduce stigma commonly associated with mental health services.

Once again two sixteen-bedded wards will be developed with appropriate supporting accommodation. The accommodation on the wards is arranged so as to allow a graduation from public, through public/private, to private spaces i.e. bedrooms. All of the bedrooms will be single, with En-suite facilities, so as to maximise privacy and dignity. They are arranged to allow segregation of male and female bedrooms within a single ward should the Trust wish to deliver mixed ward services. Space will also be provided for the Home Treatment Team,

Patient Support, Out Patients, On-call, Locality Management, Staff Welfare and Facilities Management. The site is compact so a great deal of attention has been paid to ensure that the two inpatient wards are not overlooked from any of the more public areas.

The site overlooks Sparkhill Park which forms the backdrop to the views from the Wards which are located towards the back of the site away from the street frontage. A range of formal and informal hard and soft landscapes, which may allow for active therapeutic activities and equally, quiet moments of reflection have been created around the building to augment the park.

8.9.3 Moseley Hall site

Moseley Hall Hospital is an historic site situated approximately 4 km south of the City Centre, with developments dating back to 1681. The hospital currently provides inpatient care for older people with physical illness, with access to x-ray, and other diagnostic tests. The Psychiatry for Older People shares clinical, academic and educational links with both psychiatry of working age and geriatric medicine.

The proposals for the Older Age Psychiatry unit at the Moseley Hall site will facilitate shared clinical working between the two services, offering a holistic and de-stigmatised service. There is also an opportunity to link teaching and research, and efficiency in sharing library and seminar space.

The unit will be attached to the existing hospital but will be stand alone. A new shared Entrance with Canopy provides the link and draws visitors towards this common point. There will be three 21 bed wards with a range of appropriate supporting accommodation – 2 for functional illness and the other for organic illness. Rooms will be single with En-suite facilities however there will be a double room on each ward. As you would expect from an older site, the unit, as with the rest of the hospital is set in a mature landscape and the design and layout of the unit takes full advantage of this setting.

A Day Hospital, offering 25 places, is also being provided together with an Outpatient Suite of rooms and other Therapies Activity space. Accommodation for Therapists, Social Workers and the Directorate Management Team is provided on the first floor.

The development of Moseley Hall will be added as an Anticipated Variation to the main contract. A detailed paper setting out the reasons for this and the provisional contractual terms as at September 2005 is provided at **Appendix 8D**.

8.10 Design Issues

8.10.1 Consumerism

Consort enthusiastically embraced the Consumerism Agenda as a vehicle to provide a better quality environment for patients, visitors and staff. This is demonstrated in the following narrative, and in the matrix that is attached as **Appendix 8E**.

8.10.2 Privacy and Dignity

With the exception of a two-bedded room on each of the Older Adult wards, provided at the Trust's request, all other bedrooms across the whole of the scheme are single and have En-suite facilities. Bedrooms are provided in clusters and the use of 'swing doors' will allow the provision of single sex bedroom zones if the Trust does not adopt a single sex ward policy.

Using the gradient on the QEMC campus all wards benefit from level access to external areas – courtyards and gardens.

Each ward (except the Mother and Baby Unit) has a Women Only quiet room and specific Child Visiting rooms are provided in each of the Adult building and in each of the Speciality wards.

Discrete access is available to the Adult Wards and the PICU on the QEMC site and at Showell Green Lane, and the Mother and Baby Unit and Deaf Unit in the Specialities Building.

8.10.3 Quality of Environment

Both internally and externally Consort has paid a great deal of attention to ensuring that the quality of environment enjoyed by patients, staff and visitors is of a high quality. Natural light and ventilation 'flood in' to the buildings to the extent that where required by the Trust, all clinical areas enjoy the benefit.

Special attention has been paid to colour and to texture and to harnessing the value of the external views enjoyed on all three sites to create and maximise a therapeutic and healing environment.

8.10.4 Friendly Way-finding Strategy

All aspects of the way-finding system on each site should ensure that patients, carers, visitors and staff are able to make their way easily and quickly to their destination. The way-finding system will be an integral part of the interior design of each building and will incorporate:

- Clear and straight forward external and internal signs;
- Clear and obvious routes through both site and building(s);
- Prominent site and building entrances; and
- Well located Reception Areas.

8.10.5 Entrances, Reception and Waiting Areas

Each building has a public foyer which has been design to be well lit, airy and welcoming. These incorporate waiting areas, toilet facilities and a Reception point. Meet & Greet café areas have been included off the foyer area in each Locality building and at Moseley Hall. A Restaurant for use by staff, visitors and patients is provided in the Main Entrance Specialities building on the QEMC campus.

8.10.6 Security and Safety

This key issue, for both staff and visitors, has been addressed by Consort in discussion with both groups during the design development process. Ward and Departmental design allow maximum line of site. Where appropriate 'secure' courtyards and other external areas have been created, and where possible final exit doors are lobbied to provide a double line of security.

8.10.7 Access to the Site

Access to each site should be straight forward as stated earlier. This will include appropriate access for people with disabilities. All sites benefit from public transport links and car parking spaces will be maximised whilst not over-running any site.

8.10.8 Sustainability and the NHS Environment Assessment Tool (Mental Health)

Consort's design team, which included ecological, archaeological, landscape, transport and sustainable drainage specialists, ensured that environmental and sustainability remained key issues throughout the design process. Their proposals recognise and acknowledge the NHS Estates concepts, practices and benefits of sustainable development and the overall contribution it can make to improve the quality of life in the UK. Preliminary environmental performance ratings have been undertaken for the scheme so as to provide the design teams with a benchmark. A continuous feedback process has been devised that will allow continuous improvement as design stage continues and into the construction and operational

phases. Consort is aware of the requirement for an "Excellent" score rating for the mental health scheme.

The current NEAT assessment for the Mental Health Facilities on the QEMC campus is set out in the table below:

Table 8-8: NEAT Assessment (Mental Health)

Area for Assessment	Score (%)	Weighting	Weighted Score
Management	91	15	13.64
Energy	61	15	9.15
Transport	64	10	6.36
Water	25	5	1.25
Materials	54	5	2.69
Land use/Ecology	40	10	4.00
Internal Environment	88	15	13.24
Pollution	67	10	6.67
Social	100	10	10.00
Operational Waste	100	5	5.00
Total Score			**72.00**

This score gives at NEAT Rating of "Excellent" which is the target for a new build capital development. The Moseley Hall scheme scored 71.73 whilst Showell Green Lane scored 73.36, both of which are "Excellent".

The full NEAT Assessments are included in the FBC Annex.

A 'Sustainable Construction Plan' has also been developed and will be implemented throughout the construction phases of the project. **This too is in the FBC Annex.**

8.10.9 Achieving Excellence – Design Evaluation Toolkit

The scheme benefited in that the AEDET was published at the time the Trusts were writing the Design and Construction Output Specification. The Specification was structured in such a way so as to facilitate the use of that tool to assess and review design proposals.

The completed AEDET evaluation for the Consort scheme is attached In the **FBC Annex** Although the design has evolved since this was completed, which means that some of the images and layout are no longer current, the principles, values and aspirations remain valid.

8.11 Design Review

The design of the proposed PFI scheme has been assessed by NHS Estates in April 2004. Details of this review can be found in Chapter 16 and supporting Appendices.

8.12 Hard and Soft FM Services

Haden Building Management Limited will provide a range of Hard FM Services in accordance with Schedule 14 of the Project Agreement. These services are Estates Maintenance, Grounds and Gardens, Security and Helpdesk. Q Park will be providing a Car Parking and Traffic Management service.

Soft FM Services were excluded from the scope of the PFI as part of the Route To Affordability exercise that took place following the submission of the original FITN. Prior to their exclusion it was confirmed that the original OJEC Notice gave the Trusts' the flexibility to take this course of action.

Since then both Trusts have undertaken a thorough 'bottom-up' review of the PSC Portfolio of Services. These were defined as being; Catering, Courier Services, Domestics, Laundry and

Linen, Materials Handling (Portering), Pest Control, and Waste Management and Disposal. In each case the review included bench marking of Trust services against similar services provision, and the production of a fully costed service proposal, based on the Consort designs and floor areas, backed up by staffing rosters and other relevant details and information.

Each service had to be tested to demonstrate that it could meet the Service Specifications and Quality Standards that had been issued to the Private Sector and that they could be delivered within the PSC cost envelope. It was recognised however that current service delivery techniques will not be appropriate in the new service and there will be a need for them to be modernised in line with current and future NHS Estates initiatives. New ways of delivering FM services will therefore be implemented by each Trust as part of the wider Service Transformation exercises.

Examples of innovations included in the in-house proposals include:

- **Catering**: Cook-chill meals, on-line meal ordering, Food Court
- **Domestic Services**: Rapid response team, integration with helpdesk, procurement of equipment compatible with environment, minimal use of cleaning materials by adopting multi-purpose products
- **Materials Handling**: Hand held technology, integration with helpdesk, receipt tracking system, computerised postal sorting, automatic materials handling systems
- **Pest Control**: Use of natural pesticides, Birdmaster programme, Handheld technology, input into hospital design process
- **Linen & laundry**: New helpdesk and management information system, traceability & lifecycle management, theatre clothing locking system, curtain rental, staff dry cleaning, customised theatre products, nurse uniform valeting service
- **Waste**: Waste minimisation & recycling initiatives, integration with helpdesk, handheld technology, rapid response team

The full service specification proposed by the in-house team is available in the FBC Annex ("UHB Facilities Division – PSC Review Bid – FM Soft Services" : Dated April 2004).

Set out below is a table that outlines the position in respect to the delivery of Hard and Soft Facilities Management Services and other services associated with the BNHP following the services review which, for both Trusts, demonstrated that best VFM was obtained if they retained responsibility for the delivery of soft services.

Table 8-9: Organisations Responsible for Hard & Soft FM			
Service	**BSMHT**	**UHBFT**	**Consort**
Hard FM			
Estates Maintenance			✓
Grounds and Gardens			✓
Security			✓
Car Parking and Traffic Management			✓
Help Desk			✓
Soft FM			
Catering	✓	✓	
Courier	✓	✓	
Domestics	✓	✓	
Linen and Laundry	✓	✓	
Materials Handling	✓	✓	
Pest Control	✓	✓	
Waste Management and Disposal	✓	✓	
Others			
ICT Voice and Data	✓		✓ A Fully managed service to UHBFT. Cabling only to BSMHT.

All of the Hard FM Services provision for the Older Adult Service at Moseley Hall Hospital are included in the current Unitary Payment. There was some discussion with SBPCT in respect to moving towards certain 'whole site' solutions e.g. Security but this approach was not adopted.

UHBFT are separately contracting with Busy Bees for nursery provision but there is an interface agreement between Busy Bees and Consort such that the Trust does not bear any construction risk associated with the provision of a Nursery facility on the site.

8.13 Interim Services

Consort will deliver Interim Services from a period of no later than 6 months prior to Practical Completion for each acute element of the Project and 3 months for mental health. Interim Services will be delivered from within existing buildings on the QEMC campus and at Selly Oak, and within existing budgets so it is recognised that Consort will not be able to deliver services to the full Output Specification and Performance Monitoring regime during this period.

The table below highlights the practical completion dates of the various phases and buildings, the date at which Interim Services will commence and the Equipment and IT Commissioning completion dates.

Table 8-10: Interim Service Commencement Dates			
Building or Phase	**Practical Completion date**	**Interim Services Commencement Date**	**Equipment & IT Commissioning Completion date**
Acute		May 2009	
Phase 1a	Feb 2010		June 2010
Phase 1	April 2010		June 2010
Phase 2	Sept 2010		Nov 2010
Phase 3a	April 2011		June 2011
Phase 3	August 2011		October 2011
Retained Estate	August 2012		October 2012
Mental Health			
Showell Green Lane	April 2008	Jan 2008	June 2008
South Locality	April 2008		June 2008
Speciality Building	April 2008		June 2008
Moseley Hall	tba		

The Trusts and Consort, have agreed the drafting of the Specifications and Performance Parameters for Schedule 14 of the Project Agreement, and have agreed through further discussions and negotiation the extent of compliance expected of Haden during each period given the limitations of the physical environment and financial resources. This is set out in Schedule 16.

8.14 Moseley Hall Chapel

As part of the agreement between SBPCT and the mental health trust to acquire land at Moseley Hall, the SHA has agreed to fund SBPCT directly the sum of £425,000 for reprovision of the chapel and other associated accommodation on the site. The expected capital charge on this investment is within the capital charge reductions on the buildings due to be demolished and the PCT is therefore content that the scheme is affordable.

COMPARISON OF PSC AND PFI

9.1 Financial Impact of the PSC

The key financial aspects of the preferred option (Option 5) identified in the OBC, as summarised in OBC Section 10, "Financial Appraisal of Options" and OBC Section 14, "The Preferred Option" were as follows:

Table 9-1 : Key Financial Aspects of OBC Preferred Option

	Acute Services	Mental Health Services	Whole Project
	£m	£m	£m
Gross Capital Cost Including VAT at MIPS 310 VOP	266.0	40.2	306.2
Expenditure (All 2001/2 pay and prices)			
Pay	144.7	57.8	202.5
Non Pay	105.5	13.8	119.3
Capital Charges	33.1	6.3	39.4
Total Expenditure	**283.3**	**77.9**	**361.2**
Existing Base			
Pay	140.1	53.2	193.3
Non Pay	84.5	13.1	97.6
Capital Charges	15	3.9	18.9
Total Expenditure	**239.6**	**70.2**	**309.8**
Expenditure Increase	43.7	7.7	51.4

The preferred option identified in the OBC has been reviewed and updated to create the FBC Public Sector Comparator. The key financial changes reflected in the FBC are summarised in the following paragraphs.

9.1.1 General changes in financial assumptions

The following changes in assumptions have been applied to all financial models:

- Updated price base from 2001/2 to 2004/5.
- The effect of consumerism (DCAGs).
- The effect of the change in the public sector cost of capital from 6% to 3.5%.

9.1.2 Changes to UHBFT assumptions

Changes to the assumptions of the acute element of the PSC include:

- The correction of errors and omissions
- Changes relating to the Royal Centre for Defence Medicine (RCDM) and the University of Birmingham (UoB). These do not impact on the cost to the Trust or Commissioners since the Ministry of Defence (MOD) and UoB will fund these elements of the scheme.
- The addition of trend growth, which Commissioners agreed to fund as part of the capacity planning exercise, conducted in 2003. This led to an increase in the size of the hospital through the addition of 59 beds, 1 theatre and 1 additional MRI scanner. The associated medical equipment was also added to the scheme. Subsequently, this has been remodelled as described in Chapter 12.
- The decision by UHBFT to add comfort cooling to the PSC.
- The remodelling of resources (beds, theatres) for UHBFT required to re-provide base activity
- The removal of EPR (except for the infrastructure costs) from the New Hospital scheme. EPR is now being procured via a separate scheme.

- Recalculation of the cost of Soft FM provision as part of the final decision to remove from the PFI procurement.
- Reduction in some accommodation requirements in respect of office accommodation expected to be provided off site and other non essential space.
- Amending specification to which design responds to include requirement for Civic Landmark.
- Including Energy Centre and Car Park provision in capital costs. In the OBC energy had been included as a managed service and it had been assumed that the cost of Car Parks would be covered by the revenue achievable so both were excluded. The adjustment reflects 70% of the capital cost of all scheme Car Parks and the revenue stream to match to show parity with PFI. This in itself has increased capital costs of the PSC by over £30m but is in essence presentational.

9.1.3 BSMHT

Key changes to the mental health component include:

- Addition of some accommodation required for compliance with recently issued NSFs
- Reduction in accommodation to achieve affordable scheme
- Including Car Park provision in capital costs. In the OBC energy had been included as a managed service and it had been assumed that the cost of Car Parks would be covered by the revenue achievable so both were excluded. The adjustment reflects 30% of the capital cost of all scheme Car Parks and the revenue stream to match to show parity with PFI. This in itself has increased capital costs of the PSC by circa £13m but is in essence presentational.

The BSMHT option is materially different from that proposed at OBC and indeed that on which the bidders were appointed at FITN.

The original solution was to build an older adult facility, a specialties facility and a younger adult facility for the Edgbaston locality on land to the South of the current hospital. In addition two further younger adult facilities were to be built on distant sites to serve the populations of Sparkhill and Stirchley. Unfortunately, in July 2004 the purchase of the Stirchley site fell through and this caused the Trust to reconsider the preferred location of all the facilities.

The current solution is to build a specialties facility and an enlarged younger adult facility on the land to the south of the current hospital. The Sparkhill facility remains as the original solution. An older adult facility has now been designed on a different hospital site (owned by one of the local PCTs) in Moseley but is not included in the PFI contract at Financial Close. An option exists to exercise a variation to bring this facility into the scheme if certain parameters are met.

In the light of these changes the PSC design is no longer valid and this case uses the designs drawn up with Consort to form a Conventionally Funded Option which has been independently costed to form the basis of comparison with the PFI.

9.1.4 Capital Costs

The capital costs of the PSC, at MIPS 415 VOP, are assessed at £593.9m including VAT but excluding inflation.

Detailed capital costs for the PSC have been prepared by the Trusts quantity surveyors Davis Langdon. They have prepared FB forms for the whole scheme as required by the Capital Investment Manual and these are included in **Appendix 9A.** They are summarised in table 9-2 which also provides a split of capital costs between the two Trusts:

Table 9-2 Summary of Capital Costs of PSC

	UHBFT									BSMHT							
	UHBT New Build Grand Total	REFURBISHED Buildings	non asset creating (enabling works)	UoB New Build	RCDM Direct New Build	Section 106 Works	UHBT Sub Total	UHBT VAT	UHBT Grand Total	Total QEPH New Build	Moseley Hall New Build	Showell Green New Build	non asset creating (enabling works)	BSMHT Sub Total	BSMHT VAT	BSMHT Grand Total	**GRAND TOTAL INC. VAT**
	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	**£**
Works Cost Total	298,722,214	27,412,346	6,952,498	7,457,223	5,153,660	0	345,697,941	60,497,140	406,195,081	33,522,418	10,577,496	6,808,727	218,380	51,127,021	8,947,229	60,074,249	**466,269,330**
Provisional location adjustment (-4%)	-11,948,889	-1,096,494	-278,100	-298,289	-206,146	0	-13,827,918	-2,419,886	-16,247,803	-1,340,897	-423,100	-272,349	-8,735	-2,045,081	-357,889	-2,402,970	**-18,650,773**
Sub Total	286,773,325	26,315,852	6,674,398	7,158,934	4,947,514	0	331,870,024	58,077,254	389,947,278	32,181,521	10,154,396	6,536,378	209,645	49,081,940	8,589,339	57,671,279	**447,618,557**
Fees	35,846,666	3,289,482	834,300	894,867	618,439	0	41,483,753	0	41,483,753	4,022,690	1,269,299	817,047	26,206	6,135,242	0	6,135,242	**47,618,995**
Non Works Costs	14,860,597	287,807	0	30,360	24,569	10,055,000	25,258,333	0	25,258,333	5,107,512	4,619,754	804,440		10,531,705	0	10,531,705	**35,790,038**
Land receipts	-27,778,000	0	0	0	0	0	-27,778,000	0	-27,778,000	-4,200,000	0	0	0	-4,200,000	0	-4,200,000	**-31,978,000**
Equipment Costs	49,728,612	0	0	0	0	0	49,728,612	8,702,507	58,431,119	700,718	0	0	0	700,718	122,626	823,344	**59,254,463**
EPR	950,000	0	0	0	0	0	950,000	166,250	1,116,250	0	0	0	0	0	0	0	**1,116,250**
Planning Contingency	22,340,916	1,776,320	450,522	483,228	333,957	0	25,384,943	4,442,365	29,827,308	2,214,296	1,285,422	441,206	14,151	3,955,074	692,138	4,647,212	**34,474,520**
TOTAL	382,722,116	31,669,461	7,959,220	8,567,389	5,924,479	10,055,000	446,897,665	71,388,376	518,286,041	40,026,736	17,328,871	8,599,071	250,001	66,204,679	9,404,103	75,608,782	**593,894,824**
Tender price inflation	27,647,099	5,444,528	191,788	596,563	412,283	0	34,292,262	6,001,146	40,293,407	2,733,633	1,592,468	544,685	9,639	4,880,424	854,074	5,734,498	**46,027,905**
Sub Total	410,369,215	37,113,989	8,151,008	9,163,952	6,336,762	10,055,000	481,189,927	77,389,522	558,579,449	42,760,369	18,921,338	9,143,756	259,640	71,085,103	10,258,177	81,343,280	**639,922,729**
Post tender inflation	41,332,004	2,797,833	169,569	891,854	616,357		45,807,616	8,016,333	53,823,949	1,391,231	1,121,505	277,207	3,699	2,793,641	488,887	3,282,529	**57,106,478**
TOTAL	451,701,218	39,911,822	8,320,577	10,055,806	6,953,119	10,055,000	526,997,543	85,405,855	612,403,398	44,151,600	20,042,843	9,420,963	263,339	73,878,745	10,747,064	84,625,809	**697,029,207**

A reconciliation between OBC and FBC capital costs and an explanation of the movements for UHBFT is given in **Appendix 9B**. In comparison to the OBC restated to current levels the capital costs have increased overall by 37.4%, the majority is in response to updated specifications or presentational.

Since the Mental Health scheme PSC is now a conventionally funded option using the Consort design it is not a direct development of the OBC preferred option.

Table 9-3 compares the OBC preferred option capital cost for Mental Health (inflated to the current reporting rate of 415) to the capital costs of the conventionally funded option.

An analysis of the benefits of the CFO compared to the OBC preferred option is included in appendix 4C.

Table 9-3: Comparison of Capital Costs for Mental Health Scheme

	OBC preferred option at MIPS 310	OBC preferred option at MIPS 415	FBC CFO at MIPS 415
Capital Expenditure	**£k**	**£k**	**£k**
Building, Equipment and Fees	39,187	51,619	74,965
Land and Leases	3,463	3,463	4,844
Land Sale Receipts	(2,463)	(2,463)	(4,200)
Net Capital Expenditure	40,167	52,619	75,609

The changes to the scheme are described in section 9.1.3 above but it is no longer entirely possible to provide a "reconciliation" from OBC to FBC. A summary of major changes is however provided in appendix 9B. It will be noted that the increase in capital costs at £23.0m is 43.7% of the inflated OBC value. Of this circa £13m relates to the Car Park adjustment explained in 9.1.3.

The PSC figures in the FBC include the capital expenditure for Moseley Hall. The scheme would not be clinically achievable without some capital solution for this client group –even if it not Moseley Hall a different solution will need to be found. To ensure a like for like comparison the Trust has assumed a revenue stream in the PFI model equivalent to that expected if the variation is exercised. A full business case will need to be completed and approved by DH before any such variation is made.

9.1.5 Overall Revenue Consequences of PSC

The following tables show the net revenue effect of the PSC on both trusts. This is shown over all the transitional years until steady state is achieved.

The PSC is currently showing a deficit all construction years for both Trusts.

The deficits are partly caused by needing to cover a 3.5% return on assets under construction for a long period before any savings or growth are possible to offset the charge and whilst still needing to run the existing hospitals. In UHBFT however this FBC also assume that there will be no support for accelerated depreciation and this now hits the bottom line of the I&E statement as a deficit.

There are post construction surpluses in UHBFT reflecting the assumption that General Tariff Support and levels of saving have been assumed to be the same within the PSC as within the PFI.

The BSMHT income assumption covers all the costs of the New Hospital as agreed with Commissioners and as they are not exposed to tariff risk they do not need tariff support to balance.

It should also be noted that UHBT have assumed a considerable increase in equipment costs to ensure the New Hospital is appropriately equipped.

Table 9-4 : Revenue Consequences of PSC –UHBFT

UHBFT PSC Affordability Analysis

	2005/06		2006/07		2007/08		2008/09		2009/10		2010/11		2011/12		2012/13		2013/14		2014/15		2015/16		2016/17	
Sources of Funding	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**
Capital Charges foregone on written out estate		335		335		335		335		5,109		6,811		6,811		6,811		6,811		6,811		6,811		6,811
Additional Income:																								
As agreed with Healthcare Commissioners	1,609		1,609		1,609		5,339		26,695		40,043		53,391		53,391		53,391		53,391		53,391		53,391	
PCT - Expected Real Growth from Tariff - CAPEX Related	0		0		0		0		0		0		2,717		4,605		7,667		10,729		13,791		15,115	
MOD	0		0		0		0		4,585		4,585		4,585		4,585		4,585		4,585		4,585		4,585	
UoB	0		0		0		0		293		293		293		293		293		293		293		293	
		1,609		1,609		1,609		5,339		31,573		44,921		60,985		62,874		65,936		68,998		72,060		73,383
Transitional Support for Change in Rate of Return		0		0		0		0		0		0		0		0		0		0		0		0
General Tariff Support for PFI Schemes		0		0		0		0		0		8,694		12,593		10,705		7,643		4,581		1,519		196
Support from NHS Bank for Accelerated Depreciation		0		0		0		0		0		0		0		0		0		0		0		0
Savings - Original		(150)		(150)		(150)		616		2,390		4,788		4,989		4,989		4,989		4,989		4,989		4,989
Savings - To Balance Support		36		155		293		612		689		0		0		0		0		0		1,000		1,000
EPR net savings		(1,609)		(1,609)		(1,609)		(1,609)		(1,609)		(1,609)		(1,609)		(1,609)		(1,609)		(1,609)		(1,609)		(1,609)
Total Sources of Funding		**221**		**341**		**479**		**5,294**		**38,152**		**63,606**		**83,771**		**83,771**		**83,771**		**83,771**		**84,771**		**84,771**

	2005/06		2006/07		2007/08		2008/09		2009/10		2010/11		2011/12		2012/13		2013/14		2014/15		2015/16		2016/17	
Applications of Funding	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**
Increased cost of growth and developments		0		0		(1,120)		2,932		23,168		33,299		43,430		43,430		43,430		43,430		43,430		43,430
RCDM Costs		0		0		0		0		0		0		0		0		0		0		0		0
UoB Costs		0		0		0		0		0		0		0		0		0		0		0		0
Increased Capital Charges Due to New Hospital		(3,903)		1,889		5,805		10,428		17,770		32,386		30,639		26,604		26,053		25,792		25,573		25,423
Increased Capital Charges Due to Accelerated Depreciation		5,871		16,451		16,862		17,283		17,715		9,310		2,531		0		0		0		0		0
Increased Capital Charges for Equipment		(8)		(505)		(460)		(703)		(641)		957		1,935		1,825		2,009		1,911		2,117		2,737
Transitional Costs		2,415		517		651		651		3,602		67		268		0		0		0		0		0
Increased Revenue Costs R2A		0		0		0		1,427		1,427		1,427		1,427		1,427		1,427		1,427		1,427		1,427
Total Applications of Funding		**4,375**		**18,351**		**21,737**		**32,018**		**63,042**		**77,446**		**80,230**		**73,285**		**72,918**		**72,560**		**72,547**		**73,017**
Affordability (Gap) / Surplus		**(4,154)**		**(18,010)**		**(21,259)**		**(26,724)**		**(24,889)**		**(13,841)**		**3,541**		**10,486**		**10,853**		**11,211**		**12,224**		**11,754**

Table 9-5: Revenue Consequences of PSC -BSMHT

BSMHT PSC Affordability Analysis

	2005/06		2006/07		2007/08		2008/09		2009/10		2010/11		2011/12		2012/13		2013/14		2014/15		2015/16		2016/17	
Sources of Funding	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**
Capital Charges foregone on written out estate		0		0		0		1,026		1,368		1,368		1,368		1,368		1,368		1,368		1,368		1,368
Additional Income:																								
As agreed with Healthcare Commissioners	0		0		698		6,477		6,477		6,477		6,477		6,477		6,477		6,477		6,477		6,477	
PCT - Expected Real Growth from Tariff - CAPEX Related	0		0		0		0		0		0		0		0		0		0		0		0	
MOD	0		0		0		0		0		0		0		0		0		0		0		0	
UoB	0		0		0		0		0		0		0		0		0		0		0		0	
		0		0		698		6,477		6,477		6,477		6,477		6,477		6,477		6,477		6,477		6,477
Transitional Support for Change in Rate of Return		0		0		0		0		0		0		0		0		0		0		0		0
General Tariff Support for PFI Schemes		0		0		0		0		0		0		0		0		0		0		0		0
Support from NHS Bank for Accelerated Depreciation		0		8,564		8,779		0		0		0		0		0		0		0		0		0
Savings - Original		0		0		(698)		(2,858)		(3,386)		(3,386)		(3,386)		(3,386)		(3,386)		(3,386)		(3,386)		(3,386)
Savings - To Balance Support		0		0		0		0		0		0		0		0		0		0		0		0
EPR net savings		0		0		0		0		0		0		0		0		0		0		0		0
Total Sources of Funding		**0**		**8,564**		**8,779**		**4,646**		**4,459**		**4,459**		**4,458**		**4,459**		**4,459**		**4,459**		**4,459**		**4,459**

	2005/06		2006/07		2007/08		2008/09		2009/10		2010/11		2011/12		2012/13		2013/14		2014/15		2015/16		2016/17	
Applications of Funding	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**
Increased cost of growth and developments		0		0		(480)		(480)		(480)		(480)		(480)		(480)		(480)		(480)		(480)		(480)
RCDM Costs		0		0		0		0		0		0		0		0		0		0		0		0
UoB Costs		0		0		0		0		0		0		0		0		0		0		0		0
Increased Capital Charges Due to New Hospital		429		357		496		3,042		3,565		3,663		3,447		3,276		3,084		2,889		2,694		2,510
Increased Capital Charges Due to Accelerated Depreciation		0		8,564		8,779		0		0		0		0		0		0		0		0		0
Increased Capital Charges for Equipment		0		8		60		108		106		104		105		121		142		146		138		139
Transitional Costs		41		133		657		2,017		0		0		0		0		0		0		0		0
Increased Revenue Costs R2A		0		0		0		0		0		0		0		0		0		0		0		0
Total Applications of Funding		**470**		**9,061**		**9,511**		**4,687**		**3,191**		**3,286**		**3,072**		**2,917**		**2,746**		**2,555**		**2,353**		**2,169**
Affordability (Gap) / Surplus		**(470)**		**(497)**		**(732)**		**(41)**		**1,268**		**1,173**		**1,387**		**1,542**		**1,713**		**1,904**		**2,107**		**2,290**

9.1.6 Revenue changes including Capital Charges

The planned revenue costs outlined for the preferred option within the OBC have been reviewed in deriving the FBC at 2004/5 pay and price levels. Specific issues for each trust are as follows:

9.1.7 UHBFT

UHBFT has refreshed its activity modelling as described in **Appendix 6A** for the purposes of this FBC.

Some specific growth cases included at OBC and at the later FITN agreement with commissioners in August 2003 have now been absorbed into the current base. On the other hand the general trends in activity increase, particularly in the emergency sector, have led to an upwards revision of the beds required for trend growth from 59 at FITN when they were first accepted to 81 in this business case.

The expenditure increase modelled in this case takes account of all the cost increases consequent on providing these increased services and in re-providing the current service in a new build hospital.

At FITN agreement in August 2003, UHBFT sought agreement with Commissioners on the basis of increased costs to the Trust of the PSC.

However, for UHBFT it is now apparent that the income actually received from commissioners will be generated under Payment by Results and therefore in this FBC the Trust has modelled the increase in income expected for the activity modelled in this case in accordance with the following methodology.

The FBC activity has been priced in accordance with the latest 2005/06 Payment by Results (PbR) guidance and compared to the Trust's 2004/05 health care income total. All comparisons have been made at 2005/06 price levels and deflated to 2004/05.

2003/04 activity has been used as the basis for the PbR modelling, excluding activity that took place in other Trusts. Admitted Patient Care (APC) figures in the FBC analysis have been converted from FCEs to Spells, using 03/04 ratios. Trend growth between 03/04 and 2011 has then been applied to both APC and Outpatient (OPA) data, by specialty as far as possible.

National tariff/local prices have been applied as necessary. Due to the complexity of the national tariff in 05/06 an 'average' tariff price has been calculated for the Trust, incorporating long stay bed days, short stay tariff and specialised services top-up, pro rata to actual 03/04 data.

Specific growth cases in the FBC have been costed separately, using a casemix split consistent with that used in previous financial modelling.

Cost per case and other non-APC/OPA activity are projected from 03/04 outturn to 2011 by extrapolating recent trends, but restricting growth where potential capacity constraints exist.

The resulting split by PCT is included at appendix 9C but is summarised as follows:

Table 9-6: UHBFT PFI Growth Assumptions

UHBFT PFI GROWTH ASSUMPTIONS
SUMMARY OF 2011 PROJECTED INCOME UNDER TARIFF

		2011 Projection £		2004/05 Base £
APC - non-mandatory	£	9,973,546	£	6,805,563
APC - mandatory	£	135,200,135	£	134,462,953
ITU	£	22,202,600	£	18,938,809
OPAs	£	43,657,888	£	41,270,483
EBTs	£	9,359,280		
Specific Growth Cases	£	25,206,551	£	-
NSCAG	£	12,396,980	£	11,768,100
PPs	£	3,036,302	£	2,868,766
BMT/Haemophilia	£	11,762,998		
CPC	£	20,009,874	£	22,182,258
CRF	£	24,950,975	£	17,956,840
Wales			£	2,785,400
OATS			£	739,500
A&E	£	8,161,770		
Direct Access	£	4,868,819		
Blocks	£	2,888,674	£	12,220,315
04/05 transition adjustment			-£	8,396,600
Total	**£**	**333,676,392**	**£**	**263,602,387**
Deflated 2011 Projection (2005/06 tarriff used)	**£**	**315,384,114**	**£**	**263,602,387**
Projected Increase	**£**	**51,781,727**		

The expected increased marginal increase in cost (i.e. excluding building costs) related to this income is £ 40.5 m indicating a contribution to the increased cost of the building of £11.3m. Modelling for PBR at this stage is very uncertain as the policy is still changing. Nevertheless, to be prudent the Trust has based the expected Healthcare Income Increase on this figure. It has also been assumed £1.61 m necessary for the implementation of EPR will be funded either centrally through NPfIT or added to tariff taking the Healthcare Income Increase modelled in this FBC to £53.4m.It should be noted that the total trust income for 2004/5 was circa £355m but this included education, SLA and other trading income.

9.1.8 BSMHT PSC

The sizing of the Mental Health Hospital at OBC assumed a model of care dependent on an increase in community services and the costs of these services were included in the case. Many of these services have now commenced and the costs are in the Mental Health Trust base. Consequently the related additional costs in the FBC are less than those in the OBC.

BSMHT have however agreed their increased cost envelope over OBC with commissioners. Birmingham PCTs have agreed to fund the additional costs identified and recognised at FITN4 stage of £1,517,000 at 2003/04 pay and price level. The Birmingham PCTs and Trust have however agreed to work jointly to reduce the overall costs of the mental health element of the project by £400,000 in line with mental health strategies currently being jointly developed.

9.2 PFI Affordability

Based on the PSC models the Trusts have derived what elements of their expenditure will be available to support the Unitary payment. This is shown in the tables overleaf.

Table 9-7: PFI Affordability - UHBFT

UHBFT PFI Affordability Analysis

	2005/06		2006/07		2007/08		2008/09		2009/10		2010/11		2011/12		2012/13		2013/14		2014/15		2015/16		2016/17		2017/18	
Sources of Funding	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000
Services transferred to PFI provider		98		128		128		721		3,547		5,775		5,895		6,061		6,061		6,061		6,061		6,061		6,061
Capital Charges Foregone on Written Out Estate		335		335		335		335		335		5,009		6,811		6,811		6,811		6,811		6,811		6,811		6,811
Capital Charges foregone on retained (contributed) estate										2,276		3,036		2,989		2,936		2,882		2,829		2,776		2,722		2,669
Additional Income:																										
As agreed with Healthcare Commissioners	1,609		1,609		1,609		1,609		6,787		35,267		53,391		53,391		53,391		53,391		53,391		53,391		53,391	
PCT - Expected Real Growth from Tariff - CAPEX Related	0		0		0		0		0		0		2,717		4,605		7,667		10,729		13,791		15,115		15,310	
MOD	0		0		0		0		390		3,036		4,763		5,032		5,032		5,032		5,032		5,032		5,032	
UoB	0		0		0		0		0		411		411		411		411		411		411		411		411	
		1,609		1,609		1,609		1,609		7,177		38,715		61,282		63,439		66,501		69,563		72,625		73,949		74,144
General Tariff Support for PFI Schemes		0		0		0		0		0		8,694		12,593		10,705		7,643		4,581		1,519		196		0
Savings - Original		(150)		364		878		1,392		1,906		3,191		4,989		4,989		4,989		4,989		4,989		4,989		4,989
Savings - To Balance Support		36		155		293		612		689		0		0		0		0		0		1,000		1,000		1,000
EPR net savings		(1,609)		(1,609)		(1,609)		(1,609)		(1,609)		(1,609)		(1,609)		(1,609)		(1,609)		(1,609)		(1,609)		(1,609)		(1,609)
Total Sources of Funding		**320**		**983**		**1,634**		**3,061**		**14,322**		**62,809**		**92,951**		**93,333**		**93,280**		**93,227**		**94,173**		**94,120**		**94,067**

	2005/06		2006/07		2007/08		2008/09		2009/10		2010/11		2011/12		2012/13		2013/14		2014/15		2015/16		2016/17		2017/18	
Applications of Funding	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000
Unitary Payment		0		297		729		1,017		3,050		26,006		39,636		42,409		42,339		42,339		42,339		42,339		42,339
Estimated Additional UP for Variation to bring in Shelled Wards		0		0		0		0		0		239		365		390		390		390		390		390		390
Increased cost of growth and developments		0		0		0		0		4,455		28,958		44,550		44,550		44,550		44,550		44,550		44,550		44,550
RCDM Costs																										
UoB Costs																										
Increased Capital Charges for Equipment		(84)		(664)		(641)		(898)		(849)		729		1,858		1,432		1,180		1,162		1,335		1,914		2,106
Increased Capital Charges for Accelerated Depreciation		5,871		16,451		16,862		17,283		17,715		9,310		2,531		0		0		0		0		0		0
Accounting Adjustments:																										
Revenue to capital transfer for Residual Interest	0		0		0		0		0		2,884		2,985		3,089		3,198		3,309		3,425		3,545		3,669	
Capitalisation of Residual Interest	0		0		0		0		0		(2,884)		(2,985)		(3,089)		(3,198)		(3,309)		(3,425)		(3,545)		(3,669)	
PDC Dividend on Residual Interest	0		0		0		0		0		50		152		257		366		478		595		715		840	
Amortisation of prepayment for Deferred Asset	0		0		0		0		1,510		1,523		1,523		1,523		1,523		1,523		1,523		1,523		1,523	
PDC dividend on Deferred Asset	0		0		0		0		766		1,513		1,466		1,413		1,359		1,306		1,253		1,199		1,146	
		0		0		0		0		2,276		3,086		3,141		3,193		3,248		3,307		3,370		3,438		3,509
Transitional Costs		0		0		0		0		0		3,509		2,921		0		0		0		0		0		0
Increased Revenue Costs R2A		0		0		0		0		1,427		1,427		1,427		1,427		1,427		1,427		1,427		1,427		1,427
Total Applications of Funding		**5,786**		**16,084**		**16,950**		**17,402**		**28,074**		**73,264**		**96,428**		**93,401**		**93,133**		**93,175**		**93,410**		**94,057**		**94,320**

Affordability (Gap) / Surplus		**(5,466)**		**(15,101)**		**(15,315)**		**(14,341)**		**(13,752)**		**(10,455)**		**(3,477)**		**(67)**		**147**		**52**		**763**		**63**		**(253)**

Table 9-8 : PFI Affordability - BSMHT

BSMHT PFI Affordability Analysis

	2005/06		2006/07		2007/08		2008/09		2009/10		2010/11		2011/12		2012/13		2013/14		2014/15		2015/16		2016/17		2017/18	
Sources of Funding	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**
Services transferred to PFI provider		0		0		0		993		993		993		993		993		993		993		993		993		993
Capital Charges Foregone on Written Out Estate		0		0		0		1,026		1,368		1,368		1,368		1,368		1,368		1,368		1,368		1,368		1,368
Capital Charges foregone on retained (contributed) estate										0		0		0		0		0		0		0		0		0
Additional Income:																										
As agreed with Healthcare Commissioners	0		0		698		6,477		6,477		6,477		6,477		6,477		6,477		6,477		6,477		6,477		6,477	
PCT - Expected Real Growth from Tariff - CAPEX Related	0		0		0		0		0		0		0		0		0		0		0		0		0	
MOD	0		0		0		0		0		0		0		0		0		0		0		0		0	
UoB	0		0		0		0		0		0		0		0		0		0		0		0		0	
		0		0		698		6,477		6,477		6,477		6,477		6,477		6,477		6,477		6,477		6,477		6,477
Transitional Support for Change in Rate of Return		0		0		0		0		0		0		0		0		0		0		0		0		0
General Tariff Support for PFI Schemes		0		0		0		0		0		0		0		0		0		0		0		0		0
Support from NHS Bank for Accelerated Depreciation		0		8,564		8,779		0		0		0		0		0		0		0		0		0		0
Savings - Original		0		0		(698)		(2,858)		(3,386)		(3,386)		(3,386)		(3,386)		(3,386)		(3,386)		(3,386)		(3,386)		(3,386)
Savings - To Balance Support		0		0		0		0		0		0		0		0		0		0		0		0		0
EPR net savings		0		0		0		0		0		0		0		0		0		0		0		0		0
Total Sources of Funding		**0**		**8,564**		**8,779**		**5,639**		**5,452**		**5,452**		**5,452**		**5,452**		**5,452**		**5,452**		**5,452**		**5,452**		**5,452**

	2005/06		2006/07		2007/08		2008/09		2009/10		2010/11		2011/12		2012/13		2013/14		2014/15		2015/16		2016/17		2017/18	
Applications of Funding	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**
Unitary Payment		0		0		30		4,131		5,233		5,233		5,213		5,233		5,233		5,233		5,233		5,233		5,233
Increased cost of growth and developments		0		0		0		0		0		0		0		0		0		0		0		0		0
RCDM Costs																										
UoB Costs																										
Increased Capital Charges for Equipment		0		8		60		108		106		104		105		121		142		146		138		139		78
Increased Capital Charges for Accelerated Depreciation		0		8,564		8,779		0		0		0		0		0		0		0		0		0		0
Accounting Adjustments:																										
Revenue to capital transfer for Residual Interest	0		0		327		338		350		362		375		388		402		416		430		445		461	
Capitalisation of Residual Interest	0		0		(327)		(338)		(350)		(362)		(375)		(388)		(402)		(416)		(430)		(445)		(461)	
PDC Dividend on Residual Interest	0		0		6		17		29		41		54		67		81		95		110		125		141	
Amortisation of prepayment for Deferred Asset	0		0		0		0		0		0		0		0		0		0		0		0		0	
PDC dividend on Deferred Asset	0		0		0		0		0		0		0		0		0		0		0		0		0	
		0		0		6		17		29		41		54		67		81		95		110		125		141
Transitional Costs		0		0		0		1,370		0		0		0		0		0		0		0		0		0
Increased Revenue Costs R2A		0		0		0		0		0		0		0		0		0		0		0		0		0
Total Applications of Funding		**0**		**8,572**		**8,874**		**5,626**		**5,367**		**5,377**		**5,372**		**5,421**		**5,456**		**5,474**		**5,481**		**5,496**		**5,451**

Affordability (Gap) / Surplus		**0**		**(8)**		**(95)**		**13**		**85**		**75**		**80**		**31**		**(4)**		**(22)**		**(29)**		**(44)**		**1**

Recent guidance proposes centralised General Tariff Support for Acute Trusts but not Mental Health Trusts.

Support is available for UHBFT for an amount equivalent to 2.5% of the FB1 capex figure for the PSC in year one tapering to 0.5% after 5 years. UHBFT propose to draw this down in proportion to their phased implementation as follows:

Table 9-9: UHBFT Phasing of Tariff Support

	m2		2010/11 £000's	2011/12 £000's	2012/13 £000's	2013/14 £000's	2014/15 £000's	2015/16 £000's	2016/17 £000's
Phase 1a	9,000	Apr-10	(1,177)	(941)	(706)	(471)	(235)	0	0
Phase 1	54,650	Jun-10	(5,954)	(5,954)	(4,525)	(3,096)	(1,667)	(238)	0
Phase 2	28,700	Nov-10	(1,563)	(3,439)	(2,689)	(1,939)	(1,188)	(438)	0
Phase 3a	14,700	Jun-11		(1,601)	(1,601)	(1,217)	(833)	(448)	(64)
Phase 3	10,060	Oct-11		(658)	(1,184)	(921)	(658)	(395)	(132)
			(8,694)	**(12,593)**	**(10,705)**	**(7,643)**	**(4,581)**	**(1,519)**	**(196)**

As indicated this support is proposed to taper to zero over a five year period, the principle being that either tariff rates will rise as more trusts have new builds raising the average reference costs or the Trust will make savings to reduce their reference costs to average. This FBC assumes UHBFT will receive increased income from rising tariff as the support reduces over time.

The NHS bank has confirmed that they have allowed for support broadly in line with that assumed above.

The steady state position in both Trusts is affordable although there are deficits in UHBFT in the construction period due to accelerated depreciation.

Inflated I&E and Balance sheets for both Trusts are included at **Appendix 9D**.

9.3 DH Review

In March / April 2006 the DH conducted a review of the UHBT part of the project. As a record of this review and the changes it produced the Trusts produced an addendum to the version of the FBC which was current at that time. (Appendix 9 I)

DH approval for the scheme was granted on the basis that the only amendments to the unitary payment subsequent to the FBC addendum would relate to interest rate movements or final insurance calculations (both of which were the Trust's risk) which is the case.

This final FBC has been updated to reflect the final financial position as per the financial model which was agreed and incorporated in the signed project agreement. It therefore incorporates both the agreed FBC addendum movements and the changes in interest rates.

The FBC addendum describes clearly the conditions which UHBT has to meet in order to issue the variation notice for fitting out the shelled wards and for receipt of strategic capital for Nuffield House.

9.4 Comparison of the PSC and the Preferred PFI Solution

9.4.1 Analysis of non-financial Benefits

A benefit appraisal of the non-financial criteria was conducted to assess the PFI proposals against the public sector comparator. For consistency, the criteria and weightings used were the same as those used for comparing the options in the OBC. The results are shown below:

Table 9-9: PSC v PFI Benefit Appraisal

Benefit	Weighting	Weighted Scores	
		PSC	PFI
Quality	10.55	80.88	84.40
Patients Charter/NHS Plan Compliance	7.99	61.26	63.92
Information Management and Technology	9.77	74.90	74.90
Education, Training, Research and Development	11.36	87.09	90.88
Staff Issues	11.4	83.60	83.60
Environmental	11.99	83.93	95.92
Accessiblity	8.88	65.12	71.04
Timing of Benefit Realisation	5.95	31.73	43.63
Flexibility	9.8	71.87	75.13
Impact of Construction	6.62	35.31	44.13
Acceptability Criteria	5.7	38.00	43.70
Clinical Effectiveness	12.22	93.69	93.69
Clinical Efficiency	11.26	82.57	86.33
Well Equipped, Appropriate Facilities	10.37	79.50	82.96
Quality of Care	9.19	70.46	70.46
Quality of Outcome	6.67	42.24	53.36
Total Weighting	**150**	**1082.16**	**1158.05**

Against non-financial criteria, both the PSC and PFI deliver significant benefits over the current facilities and to almost the same degree. However, the PFI scheme improves on the PSC by 7% primarily due to a number of enhanced design features and more efficient clinical adjacencies.

9.5 Risk Analysis

This section provides a description of the methodology adopted for calculating risk values together with an analysis of the likely risk impact. In order to provide a comprehensive assessment, the full PFI Standard Form of Contract Risk matrix of risks has been examined covering the following main headings:-

- Design;
- Construction;
- Performance;
- Operating Costs;
- Variability of Revenue;
- Technical and obsolescence;
- Control;
- Residual;
- Other (including Lifestyle).

A widely accepted 3-point probability approach has been adopted and the methodology for each risk heading can be summarised as follows:

- Assess Minimum, Likely and Maximum Impact of risk to apply as a % to cost driver and derive potential risk values;
- Apply probabilities to each of those potential risk values.
- Apply a probability to each risk event occurring at all.
- Apply % for the proportion of each risk to be retained by the Trusts;

For each retained risk derived above apply discount factor for period of risk exposure to generate an NPV. **Appendix 9E** shows details of the calculation of Risk for each Trust and the derivation of the discounted value of Risk transferred to the Private Sector. This is summarised in the following tables:

Table 9-10: Risk Summary – 66 years

Risk Summary for the University Hospitals Birmingham and the Birmingham & Solihull Mental Health Trust

NPV Unitary Payment	Transfer of Risk	NPV Gross UP* £'000	% Risk to Gross UP	NPV Actual UP £'000	% Risk to Actual UP
University Hospital Birmingham NHS Trust	69,562	460,268	**15.11%**	446,270	**15.59%**
Birmingham & Solihull Mental Health NHS Trust	9,958	70,544	**14.12%**	64,544	**15.43%**
Total	79,519	530,812	**14.98%**	510,814	**15.57%**

* Grossed up for Third Party Revenue.

	PSC Risk Matrix		PFI Risk Matrix		Transfer of Risk	
University Hospital Birmingham NHS Trust	66 years undiscounted	66 years discounted	66 years undiscounted	66 years discounted	66 years undiscounted	66 years discounted
	£'000	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**
Design	6,314	5,019	4,221	3,355	2,093	1,664
Construction and Development	60,013	48,422	13,702	10,631	46,311	37,791
TOTAL CONSTRUCTION RISKS	**66,327**	**53,441**	**17,923**	**13,986**	**48,404**	**39,455**
Availabilty and Performance	120,566	28,611	7,552	4,829	113,014	23,782
Operating Cost	62,575	13,768	38,329	8,946	24,246	4,821
Variability of revenue	165,278	33,807	165,264	33,794	13	13
Termination	0	0	0	0	0	0
Technology and Obsolescence	0	0	0	0	0	0
Control Risks	93	18	93	18	0	0
Residual Value Risks	0	0	0	0	0	0
Other Project risks	4,801	3,853	2,983	2,363	1,818	1,490
EPR Risks	491	491	491	491	0	0
TOTAL OPERATING RISKS	**353,804**	**80,549**	**214,714**	**50,443**	**139,090**	**30,106**
TOTAL RISKS	**420,131**	**133,990**	**232,637**	**64,429**	**187,494**	**69,562**

All figures are exclusive of VAT

	PSC Risk Matrix		PFI Risk Matrix		Transfer of Risk	
Birmingham and Solihull Mental Health NHS Trust	66 years undiscounted	66 years discounted	66 years undiscounted	66 years discounted	66 years undiscounted	66 years discounted
	£'000	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**
Design	662	557	469	394	194	163
Construction and Development	7,975	6,849	1,888	1,644	6,087	5,205
TOTAL CONSTRUCTION RISKS	**8,638**	**7,406**	**2,357**	**2,038**	**6,281**	**5,368**
Availabilty and Performance	12,985	4,079	1,626	1,193	11,359	2,886
Operating Cost	18,335	4,625	11,199	3,007	7,136	1,619
Variability of revenue	4,195	1,998	4,188	1,990	8	8
Termination	0	0	0	0	0	0
Technology and Obsolescence	0	0	0	0	0	0
Control Risks	14	3	14	3	0	0
Residual Value Risks	0	0	0	0	0	0
Other Project risks	445	379	358	301	87	78
EPR Risks	0	0	0	0	0	0
TOTAL OPERATING RISKS	**35,975**	**11,085**	**17,384**	**6,495**	**18,590**	**4,590**
TOTAL RISKS	**44,612**	**18,491**	**19,741**	**8,533**	**24,871**	**9,958**

All figures are exclusive of VAT

Table 9-11: Risk Summary – 41 years

Risk Summary for the University Hospitals Birmingham and the Birmingham & Solihull Mental Health Trust

NPV Unitary Payment	Transfer of Risk	NPV Gross UP* £'000	% Risk to Gross UP	NPV Actual UP £'000	% Risk to Actual UP
University Hospital Birmingham NHS Trust	72,084	460,268	**15.66%**	446,270	**16.15%**
Birmingham & Solihull Mental Health NHS Trust	9,940	70,544	**14.09%**	64,544	**15.40%**
Total	82,024	530,812	**15.45%**	510,814	**16.06%**

* Grossed up for Third Party Revenue.

	PSC Risk Matrix		PFI Risk Matrix		Transfer of Risk	
University Hospital Birmingham NHS Trust	41 years undiscounted	41 years discounted	41 years undiscounted	41 years discounted	41 years undiscounted	41 years discounted
	£'000	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**
Design	6,314	5,019	4,221	3,355	2,093	1,664
Construction and Development	60,013	48,422	13,702	10,631	46,311	37,791
TOTAL CONSTRUCTION RISKS	**66,327**	**53,441**	**17,923**	**13,986**	**48,404**	**39,455**
Availabilty and Performance	92,853	31,641	7,552	4,960	85,301	26,681
Operating Cost	39,656	13,111	25,044	8,667	14,611	4,445
Variability of revenue	98,106	30,657	98,093	30,644	14	13
Termination	0	0	0	0	0	0
Technology and Obsolescence	0	0	0	0	0	0
Control Risks	55	17	55	17	0	0
Residual Value Risks	0	0	0	0	0	0
Other Project risks	4,801	3,869	2,983	2,379	1,818	1,490
EPR Risks	491	491	491	491	0	0
TOTAL OPERATING RISKS	**235,962**	**79,786**	**134,219**	**47,157**	**101,743**	**32,629**
TOTAL RISKS	**302,289**	**133,227**	**152,142**	**61,143**	**150,147**	**72,084**

All figures are exclusive of VAT

	PSC Risk Matrix		PFI Risk Matrix		Transfer of Risk	
Birmingham and Solihull Mental Health NHS Trust	41 years undiscounted	41 years discounted	41 years undiscounted	41 years discounted	41 years undiscounted	41 years discounted
	£'000	**£'000**	**£'000**	**£'000**	**£'000**	**£'000**
Design	662	557	469	394	194	163
Construction and Development	7,975	6,849	1,888	1,644	6,087	5,205
TOTAL CONSTRUCTION RISKS	**8,638**	**7,406**	**2,357**	**2,038**	**6,281**	**5,368**
Availabilty and Performance	9,691	4,183	1,626	1,203	8,065	2,980
Operating Cost	11,782	4,408	7,373	2,900	4,408	1,507
Variability of revenue	3,100	1,947	3,093	1,939	8	8
Termination	0	0	0	0	0	0
Technology and Obsolescence	0	0	0	0	0	0
Control Risks	9	3	9	3	0	0
Residual Value Risks	0	0	0	0	0	0
Other Project risks	445	381	358	303	87	78
EPR Risks	0	0	0	0	0	0
TOTAL OPERATING RISKS	**25,026**	**10,921**	**12,458**	**6,349**	**12,568**	**4,572**
TOTAL RISKS	**33,664**	**18,327**	**14,815**	**8,387**	**18,849**	**9,940**

All figures are exclusive of VAT

9.6 Economic Appraisal

The PFI agreement with Consort Healthcare is for a 35 year concession following a 6 year construction period. In accordance with the HM Treasury requirements the risks inherent in the Project have been analysed over both 41 years and also over 66 years which represents the expected life of the buildings. The assumption made in years 42 to 66 of the 66 year analysis of risks for the PFI option is that the cost of the services and lifecycle is as per the PSC.

The process by which the Net Present Value (NPV) of receipts and payments has been calculated for the PSC and PFI for both 66 and 41 year options is as follows:

All costs including capital, lifecycle and revenue cost have been entered into the generic economic model with the detailed calculations being shown in **Appendix 9F**.

The calculated NPV of risk has been split between that retained by the Public Sector under all options and that which passes to the PFI provider.

The resultant total risk adjusted NPV of each of the base case options is summarised in the tables below.

Table 9-12: Risk Adjusted Economic Comparison – 66 years

	BSMHT			UHBFT		
	Base NPV	Risk	Risk Adjusted NPV	Base NPV	Risk	Risk Adjusted NPV
	£000	£000	£000	£000	£000	£000
PSC	2742281.5	18491.0	2760772.5	7165395.8	133990.0	7299385.8
PFI	2735576.0	8533.0	2744109.0	7143177.0	64429.0	7207606.0

Table 9-13: Risk Adjusted Economic Comparison – 41 years

	BSMHT			UHBFT		
	Base NPV	Risk	Risk Adjusted NPV	Base NPV	Risk	Risk Adjusted NPV
	£000	£000	£000	£000	£000	£000
PSC	2553455.5	18327.0	2571782.5	6661727.0	133227.0	6794954.0
PFI	2547001.0	8387.0	2555388.0	6636112.1	61143.0	6697255.1

As can be seen from the above, the PFI solution offers better VFM in comparison with the PSC. The scheme therefore is value for money.

In undertaking the economic analysis use has been made of the Generic Economic Model issued by HM Treasury

9.7 Sensitivity Analysis

An exercise has been undertaken to assess the extent to which key variables would need to change before the PFI proposal would cease to offer VFM.

The facility built into the Generic Economic Model was used to determine the level of change required for the NPC of the PSC Option to become more better VFM than the PFI option.

9.7.1 University Hospitals Birmingham NHS Foundation Trust

The table below shows the results of the sensitivity analysis for UHB over 66 years grouped by per GEM section

Table 9-14: Sensitivity Summary		
GEM Subsection	**% Change**	**£ Change**
Service Costs	(1.24%)	(322,949.0)
Initial Capital Costs	(24.96%)	(99,739.6)
Life Cycle Costs	(48.23%)	(546,836.9)
Opening Value	(127.95%)	(86,141.0)
Other Capital Costs	(133.85%)	(100,683.9)
Transactions	458.58%	(127,383.8)
Transitional Costs	(801.38%)	(95,404.6)

The above table shows that the Service Costs are most sensitive to change; however, the analysis assumes that the PFI costs would not vary as the PSC varies. This would not be the case in reality as most changes in Service costs would also affect the PFI Option.

It should be noted that the Initial Capital Costs are the next most sensitive to change and then the Initial Capital Costs in the PSC would need to reduce by 26.78% to alter the VFM conclusion.

A substantial proportion of the UHBFT Unitary Payment is funded from expected growth and hence it is reasonable to ask what effect errors in forecasting the level of growth would have on the Trust.

The Trust have modelled a number of scenarios in terms of quantum of growth expected, delay in growth and tariff support. These scenarios were presented to a special Board of Directors in December 2005. The Board Paper is included as Appendix 9G.

As a direct response to the issues highlighted by this paper, the Trust has commissioned PwC to help examine further areas where savings can be made in the future if some assumptions change.

9.7.2 Birmingham & Solihull Mental Health Trust

The table below shows the results of the sensitivity analysis for BSMHT over 66 years grouped by per GEM section

Table 9-15: Sensitivity Summary		
GEM Subsection	**% Change**	**£ Change**
Service Costs	(0.33%)	(33,345.9)
Initial Capital Costs	(16.07%)	(10,014.5)
Other Capital Costs	(16.32%)	(40,031.5)
Life Cycle Costs	(70.70%)	(68,720.2)
Opening Value	(187.33%)	(8,566.6)
Transactions	242.93%	(10,202.9)
Transitional Costs	(314.24%)	(10,252.1)

The above table shows that the Service Costs are most sensitive to change; however, the analysis assumes that the PFI costs would not vary as the PSC varies. This would not be the case in reality as most changes in Service costs would also affect the PFI Option.

It should be noted that the Initial Capital Costs are the next most sensitive to change and then the Initial Capital Costs in the PSC would need to reduce by 16.07% to alter the VFM conclusion.

HUMAN RESOURCES

10.1 Summary

This chapter describes how the Trusts are dealing a range of issues concerning employees transferring (primarily) to Haden Building Management (HBML) through a TUPE process. The chapter also highlights how workforce transformation is being dealt with in each Trust.

- The project scope has been finalised to include only Hard FM with Soft FM services to be maintained in house.
- There are approximately 81 Trust employees to be transferred through the TUPE process (80 to HBML and 1 to Kingston Communications)
- Formal consultation with the appropriate Trade Unions has started and a draft transition plan is being established.
- GAD certified pension and negotiations regarding bulk transfer rates have been determined.
- Communication processes have been established with Staff Sides and the workforce generally.
- Both Trusts have identified the need for a clear workforce transformation plans to develop modern workforce which supports new models of care within the new facilities.

10.2 Employment Matters

The Birmingham's New Hospital Project will impact on all employees working within the Acute Trust and a significant proportion of those Mental Health Trust employees. This section deals with key issues which relate to how change will affect both Trusts' employees between the final approval of the project and the opening of the new hospitals.

The key issues concern:

- How the Trusts have engaged Staff Representatives within the procurement process to date;
- The impact on the employment status of those Trust employees working with Hard FM services;
- How the Trusts will work together with Haden Building Management Ltd (HBML) and Kingston Communications to develop a partnership approach with the relevant trade unions; and
- The modernisation and transformation of the workforce to deliver new models of care as described in Chapter 4.
- Continuing staff involvement with the development and progress of the project.

10.3 Human Resources – Headlines

10.3.1 Project Scope

The initial OBC project scope included Hard and Soft FM services for both Trusts. Following the evaluation of the FITN bid it was necessary to review the inclusion of Soft FM services within the project. Subsequently it was agreed to retain Soft FM services within the Trusts.

The rationale for this is fully described in Chapters 7 and 8.

10.3.2 TUPE

All employees working within Hard FM from both Trusts together with ICT/Voice from UHBFT are covered by TUPE regulations. Approximately 81 NHS employees will transfer to Haden Building Management Ltd (HBML) and Kingston Communications. It is confirmed that the statutory obligations under the TUPE regulations are being met by the Trusts and both HBML and Kingston Communications. Estates Staff will transfer no earlier than six months prior to service commencement with the employee transferring to Kingston Communications at a time to be determined after financial close.

Table 10-1 indicates the number of Trust employees transferring to HMBL and Kingston Communications. These figures include funded vacancies. The actual numbers of individual employees transferring will be no greater than the numbers express in this table. A fuller more detailed list can be found in **Appendix 10A**.

Table 10-1: Numbers of NHS Employees Subject to Transfer

To	UHBFT	BSMHT	Totals
Haden Building Management	74	6	80
Kingston Communications	1	0	1
Totals	75	6	81

10.4 Pension Matters

The Trusts confirm that both HBML and Kingston Communications have provided GAD approved comparable pensions for those Trusts' staff subject to the transfer. GAD negotiations have been concluded in agreeing bulk transfer rates.

10.5 Trade Union Recognition and Consultation

There are three unions with members who are subject to the TUPE transfer to HBML and Kingston Communications. These are:

- AEEU (Amalgamated Engineering and Electrical Union);
- UCATT(Union of Construction, Allied Trades and Technicians); and
- UNISON.

These three unions are recognised by both HBML and Kingston Communications. Both parties are currently negotiating changes to the Union Recognition Agreements which will be implemented on the TUPE transfer date.

The Trusts have developed a fully inclusive formal consultation process with all unions and staff organisations recognised by the Trusts from the SOC stage through to the current production of the FBC.

10.6 Staff Representation and Union Involvement in the Project

The involvement of Staff Representatives of recognised Trade Unions has been seen as a key pillar within a framework of inclusion and involvement for the project at all levels. The Code of Practice sets out in the PFI Guidance principal stages for the involvement of Staff Representatives within the procurement process. The Trust has sought to build upon this guidance and to offer involvement far beyond that prescribed within the guidance. The Trusts aim has been to treat Staff Representatives as key stakeholders in this project.

The Trusts identified three key engagement processes with Staff Side:

- Project involvement and general consultation;
- Effective communication; and
- Formal Consultation process - TUPE.

Outside of the formal requirement to consult and involve representatives of the staff both Trust provide opportunities for staff to receive project updates and to be involved in the development of the new hospital plans wherever practicable. This involvement will continue and increase as the project develops particularly following Financial Close.

10.7 Project Involvement and General Consultation

The inclusion of Staff Side representation and involvement within the project started at an early stage with their input into the drafting of the OJEC Notice and consultation upon the Scope of the project. During the procurement stage of the project Staff Side representatives have been fully involved in the drafting of the Output Specifications for each of the Hard and Soft FM services, this included ICT specifications.

The importance of Staff Sides involvement in the selection of the preferred bidder is illustrated in **Appendix 10B**.

Consultation has also been undertaken in the production of this section of the FBC.

10.8 Effective Communication

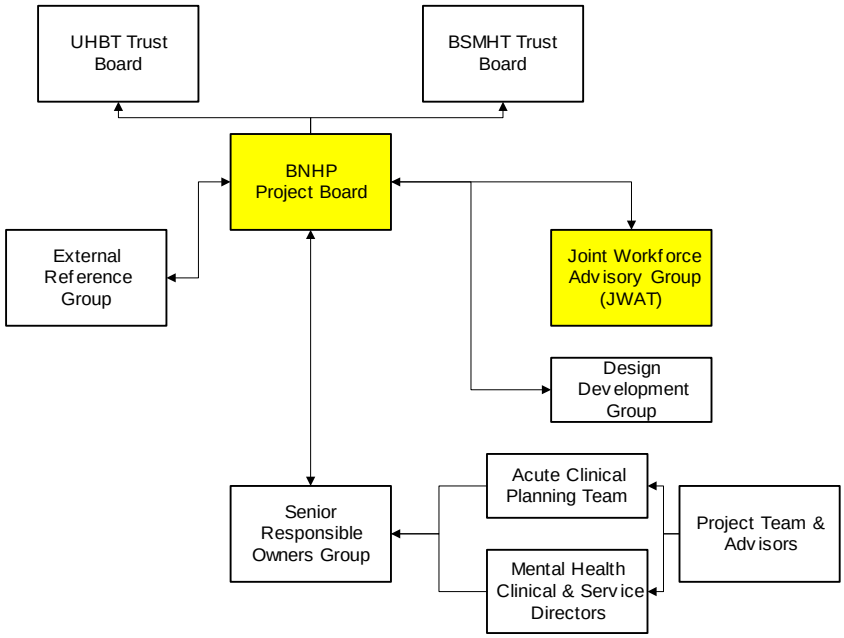
The Trusts are fully committed to communicating effectively with staff representatives, those employed by the Trust and those Full Time Union Officers (FTOs) with an interest in the scheme.

Both the Trusts and Staff Sides recognised that there were occasions when either party would need to communicate in some way on the progress of the project and specific issues of importance to staff generally. In recognition of this and to support an effective method of communication a Communication Protocol (**Appendix 10C**) was jointly established.

Communication has also been supported through a number of established and new forums. A member of the Acute project team attends the Trust Operational Trust Partnership Team); and Divisional Consultative Committee. The BHNP is a standing item at these meetings. The Project Director - Mental Health, attends the BSMHT Joint Negotiating and Consultative Committee, and Project Team members have regular meetings with staff side representatives.

Within the project structure (Fig1) a specific group, the Joint Workforce Advisory Team (JWAT) was established early in 2002 which provides a monthly forum where Staff Side Representatives, including FTOs, meet with relevant members of the Project Team and Trust Managers. This forum has acted as a key communication point where workforce related HR issues are discussed and a monthly project update is given by the Project Director.

Figure 10-1: Project Structure



10.9 Consultation Process – TUPE

With any project that affects staff and their employment status it is important to provide opportunities for staff and their representatives to be involved in the process. The sections above regarding involvement and communication demonstrate how the Trusts have managed these aspects. However, the Trusts are required to consult formally on changes that affect staff and their employment with the Trusts. The formal consultation process has and will continue to be based on a partnership approach which includes the Trusts, the employees affected, the recognised Trade Unions and representatives from HBML. This approach will continue throughout the formal consultation process until transfers are completed.

Prior to the commencement of the formal consultation process in July 2004 a number of ad hoc meetings were held with groups of Hard FM staff potentially affected by an employment transfer to Haden Building Management Limited (HBML). These meetings have included topics such as the Transfer of Undertakings (Protection of Employment) Regulations 1981 (TUPE), Pension issues and a presentation from the Governments Actuaries Department (GAD).

Relevant recognised Trade Unions were formally informed on 27 January 2004 of which groups of employees would be subject to a TUPE transfer. The first formal TUPE consultation meeting was held on 7 July 2004 these formal TUPE meetings are continuing.

In order to support those employees affected by the transfer a number of jointly agreed documents have been developed to provide a framework to manage the change process and to provide guidance for employees regarding TUPE. These documents are;

- Question and Answer – Retention of Employment and TUPE;
- A Guide to the TUPE process;
- Change Management Protocol; and
- Communication Protocol.

10.10 Pension Provision

A key concern of staff transferring out of the NHS is the provision of pensions following the transfer.

For those employees transferring from the Trusts to HBML and Kingston Communications they will no longer be eligible to make contribution to the NHS Pension Scheme. Benefits accrued up until the point of transfer are protected.

The Trusts can confirm that the pension provided by HBML to Trust staff being transferred under TUPE has been reviewed by GAD and they have issued the relevant certificate, **Appendix 10D** confirming its broad comparability. This certificate is valid until 31st October 2006 and will be renewed by HBML.

A bulk transfer value has been negotiated by GAD with HBML prior to the selection of the preferred bidder.

Affected employees will be provided with all necessary advice prior and up to the date of transfer. This will include input from GAD, Trust pension lead and lead pension advisor from HBML (Balfour Beatty)

Discussion has been held with Kingston Communications and GAD to agree the pension solution through an approved pension scheme. Details of the Kingston Communications GAD approval are contained within **Appendix 10E**. The GAD approval will be required to be renewed in March 2007.

10.11 TUPE – FM (Transition Plan)

The Trusts, together with HBML and Staff Side will agreed a plan to manage the transition of Trust Hard FM employees through the TUPE process to final transfer of employment with HBML. The importance of a tripartite approach in developing and agreeing the workforce plan cannot be overstated in ensuring that the process is understood and accepted equally by those delivering the plan and by those affected by it.

The plan will be based upon an agreed framework with appropriate actions/timescales. The framework and actions to date are listed in Table 10-2 below.

Table 10-2: Hard FM Workforce Transition Plan Framework

Framework Item	Action to Date
Establish base employee data.	HBML provided with data which will be subject to updates at agreed intervals
Introductory meetings with affected staff and HBML.	Introductory meetings held with affected staff.
Produce detailed plan and timetable for the transfer.	To be agreed when transfer date is finalised
Establish current Terms and Conditions of Service	Concluded and information provided to HBML
Provide current Job Descriptions (JD) and Training Plans	Within 6 months of transfer
Identify any differences or amendments to current JDs to those required on transfer	Within 6 months of transfer
Manage through consultation and negotiations any amendments required to JDs or employment conditions.	Within 6 months of transfer
Communicate agreed changes to affected employees.	Within 6 months of transfer
Provide Staff Briefings at appropriate intervals to update staff on progress and issues	Regular meetings are held with affected staff
Agree formal induction process for transferring staff	Process and date to be agreed prior to transfer

The agreed process for managing the workforce transition plan within the framework of the TUPE process is illustrated below in Figure 10-2.

Figure 10-2: Hard FM Workforce Transition Plan

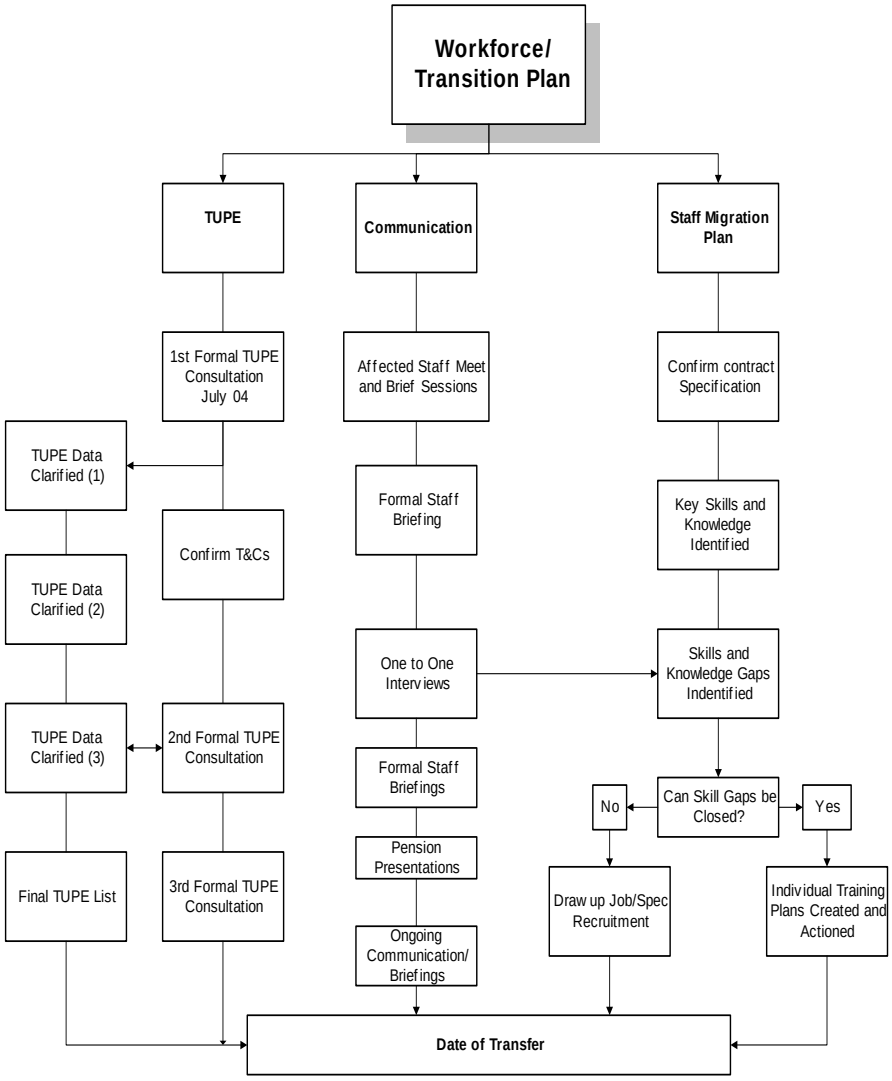


Figure 10-2 is illustrative of the process that is being undertaken to manage the transfer of staff and is subject to additional elements not indicated above which will have been subject to agreement with all parties. For example, while it is not anticipated that there will be any issues with Agenda for Change or Clause 30 of the Project Agreement, there may be differences in the Terms & Conditions of employment for transferring staff from UHBFT and BSMHT which need to be ironed out. The Trusts have provided both Haden and Kingston Communications with the current Terms & Conditions and the new Agenda for Change Terms & Conditions. Agenda for Change will have helped to harmonise the Terms & Conditions of transferring staff whereas under Whitley there may have been variations between UHBFT and BSMHT Terms & Conditions which could have caused difficulties for the staff and Hadens post transfer. Even after following the full implementation of Agenda for Change there is the potential for local variances to take place and these variations must be made known at the time of transfer.

10.12 Terms and Conditions of Service

The Trusts have provided HBML and Kingston Communications with the current terms and conditions of service, for those staff subject to the TUPE transfer they will be protected under those regulations. Agenda for Change will in many respects harmonise Terms and Conditions of Service prior to transfer, there will however be the need to address any local variations that are still applicable post implementation of Agenda for Change to ensure that these are rightfully transferred with the employees to the new service providers. Given that Agenda for Change will have been fully implemented for the groups of staff prior to transferring to HBML and Kingston Communications it is not anticipated that any assimilation issues will be outstanding at the time of transfer.

10.13 Workforce Transformation - UHBFT

The Trust recognises that in order to deliver new models of care within the newly provided hospital significant workforce development will be required. The Trust, over a number of years' has been responding to workforce modernisation and technological advances and will continue to do so regardless of new hospital buildings. What the new hospital building will provide is further opportunities to develop and modernise the workforce in response to the developing models of clinical care.

To ensure the successful operation of the new hospital a Transformation Group has been established, accountable to the Director of HR and Organisational Development, the groups remit is to ensure:

- The capacity of the services is adequate to meet anticipated demand.
- The models of care outlined in the OBC are still appropriate and where necessary and are revised and further developed.
- Developments in demand, capacity and advances in treatment since the OBC have been factored in.
- The appropriate workforce with the required skills is available.
- The required changes are embedded in care delivery prior to the opening of the new hospital.

The workforce stream for this group will refine past workforce assumptions, current workforce profile, and projected requirements including skill mix and role development. The group will also address the development of a training plan which addresses the developing changes to the workforce.

In order to modernise the workforce it will be necessary to take cognisance of the impact that the new hospital and developing workforce changes will have the local workforce economy, both within and out with the Health Sector. Links have also been established with local employer organisations through such bodies as Advantage West Midlands. These links and further work with the Birmingham and Black Country Strategic HA and local LEAs will be required to meet the Trusts continuing workforce objectives.

It is recognised that any significant changes to the profile of the workforce has the potential to impact on local healthcare providers. The Trust's workforce transformation team will work with the Workforce Development Directorate of the SHA to minimise any negative impact on neighbouring Trusts.

Preparatory work has addressed the establishing trends in the local demographics and workforce economy in order to understand key recruitment opportunities and local health developments that may impact on UHBFT workforce requirements. This work is detailed in **Appendix 10F**.

The acute hospital Workforce transformation will cover two separate staff groups.

10.13.1 Soft FM - UHBFT

It is recognised that a significant work stream will be required in order to modernise the Soft FM workforce to meet the clinical modernisation programme. The implementation of Agenda for Change will provide a useful tool in supporting the progress towards modernisation of this part of the workforce by the harmonisation of Terms and Conditions of Service. In this way the staff groups encompassed within Soft FM services will provide flexibility to work across former inflexible workgroup boundaries.

A project plan to deliver a modern Soft FM services has been developed and encompass modernising the current workforce and its interface with clinical service provision.

10.13.2 Clinical Workforce Transformation - UHBFT

Significant workforce profile change issues are to be addressed within the Transformation Group in order to support the modernisation of clinical services provided within the new hospital. A number of key drivers were identified within the OBC and are still relevant at FBC that impacts on the current workforce profile;

- Developing new models of care
- The NHS HR modernisation agenda
- Technological advances
- Best Practice

During the preparation of the OBC a significant piece of work was undertaken developing the workforce numbers for each staff group-taking cognisance of all of the above-mentioned drivers. These workforce numbers have been reviewed and represent the levels of employees required and affordable in the new hospital.

The main staff group changes in workforce numbers from OBC to 2010/11 are shown in Table 10-3 below.

Table 10-3: OBC Workforce Changes

	OBC	Current	FBC	Change %
Medical - Consultant	200.29	243.21	270.24	11.11
Medical - Other	322.55	378.97	388.38	2.48
Nursing	2142.84	2375.87	3014.41	26.68
Scientific, Therapeutic and Technical	802.23	988.38	1033.23	4.54
Facilities	629.47	551.16	413.62	-24.95
Admin & Clerical	849.83	1152.84	1085.25	-5.86
Senior Managers	191.32	269.23	262.55	-2.58
Total WTE	5138.53	5959.66	6467.68	8.52

It can be seen that the workforce overall shows an increase of 8.52% over the period from current budgets through to 2010/11. These changes have been estimated through agreed growth changes and anticipated skill changes to meet new ways of working. The most significant changes occur with nursing with an anticipated increase in unregistered grades of over 557 wte.

The workforce Transformation Group will develop recruitment and training strategies to address the planned increases for the workforce. These strategies will be developed in conjunction with local WDC's and the local health economy. It is recognised that the target

increases for Consultant and Nursing post will be challenging but the Trust is confident that the Transformation Group will develop strategies to address developing workforce issues.

Appendix 10G provides in detail workforce assumptions for each main staff group and further tables indicating grade changes from OBC through to 2010/11.

The Trust confirms the proposed 2010/11 workforce requirements for UHBFT are both affordable and obtainable.

10.14 Workforce Transformation - BSMHT

There have been significant changes since the Outline Business Case including the merger between South Birmingham Mental Health NHS Trust and Northern Birmingham Mental Health Trust and integration with Social Care Services. These developments have resulted in major organisational change programmes across the Trust to ensure robust infrastructures and systems are in place to support delivery of the service model. The model has continued to be developed and reviewed and there are clear service strategies to support implementation.

The model of care requires that people with mental health problems receive swift, appropriate treatment in the least restrictive and least stigmatising setting, enabling equitable access and early intervention for excluded groups. Furthermore that people with mental health problems and their carers, are appropriately supported enabling people to lead purposeful lives in an accepting community.

In line with National Mental Health Policy and the standards of the national service frameworks the model requires that:

- People with common mental health problems are managed effectively within the primary care system.
- People with severe mental health illnesses are swiftly referred to and managed as appropriate by specialist mental health terms.
- Partnerships are established with non-statutory sector organisations, community and user led groups to create a continuum of appropriate housing, employment, educational, social and leisure opportunities.
- Focused and co-ordinated activities are developed to improve tolerance and understanding with communities and reduce stigma.

The service model supports a process in which severe mental health illnesses are managed predominantly by our specialist mental health services and common mental health problems are managed predominantly by primary mental health carers and/or community (non-statutory) resources.

The factors that were identified within the OBC as having a major influence on workforce profiles including staffing numbers, grades and skill mix are still relevant for the FBC. These are set out in **Appendix 10H**.

10.15 Workforce Transformation and Migration Plan - BSMHT

To ensure that Human Resource strategies are in place to support the delivery of the model of care a range of work has been undertaken (and in progress) to review the workforce development and pre recruitment plans

- The work undertaken in 2002 for the OBC has been reviewed and updated taking into account the impact of national and local policy initiatives, merger, and changes to design to the new service facilities, efficiency reviews and financial affordability.

- An independent review carried out by external management consultancy has reviewed the assumptions made in relation to the workforce development requirements for the new model of care. This work informs the FBC Human Resource section.
- The identification of recruitment sources for nursing posts has been reviewed and will be monitored closely as we approach the opening of our new facilities.
- National initiatives including Improving Working Lives, Agenda for Change, Consultant Contracts, Working Time Directive, Patient Choice Initiatives and the Clinical Governance agenda will impact on the workforce profile. Further analysis is being undertaken through the Trust Workforce Development Group.
- Recruitment and Retention strategies are being reviewed and continue to be monitored. Work is ongoing at recruitment events in the local community and at national recruitment fairs.
- Work is in progress to review how the new style workers and roles and new ways of working will impact on the existing workforce profile and skill mix. The new roles will tap into a new recruitment pool and complement existing staff groups. The development of new ways of working across professional boundaries will make the best use of specialist staff groups to meet the needs of service users and carers.
- A Trust wide multi agency Project Board has been set up to steer overall direction and implementation in relation to mental health and the social inclusion agenda to support the new model of care and to further define the strategic direction for the future of day care and related services. Further projects are under way within the Trust to support the employment of Service Users e.g. *The Activate Project*.
- A New Hospital Project Executive Steering Group, Operational Group and a Workforce Development group are in place to ensure the Trusts service model is supported by robust workforce plans, migration and pre recruitment plans.

10.16 Workforce Transformation Groups - BSMHT

The Project Executive Steering Group and the New Hospital Operational Group are in place and these groups are further supported by the work of a Workforce Development group. In particular the Workforce Development group will continue to ensure the Trust's service model and service strategies are supported by robust workforce plans. The group has developed a programme to ensure that the pre recruitment model and transformational work are led and monitored pro actively in the lead up to opening of the new facilities.

The work programmes of the Workforce Development Group are designed to strengthen the connections between the New Hospital Project agenda and the Trust's operational agenda and to ensure all workforce plans are capable of delivering high quality care whilst remaining affordable, achieving maximum efficiencies, value for money and, new ways of working.

Detailed work has been undertaken in relation to workforce profiles and projected requirements including skill mix and role development to support delivery of the recruitment plan.

The main staff group changes in workforce numbers are in Nursing. These are outlined in the table below. Pre recruitment plans are dynamic in nature and subject to changes dependent on work programmes and release of Funding.

Table 10.4 Nursing Pre Recruitment Plan

	Pre Apr 06	Apr 06	Oct 06	Apr 07	Oct 07	Total
In patient Nurses	37.46	17.62	9.79	9.79	14.75	89.41
Community	54.00					54.00

10.17 Pre-Recruitment Plan

The pre recruitment and migration plan to support delivery of the service model for nursing groups is detailed in **Appendix 10I**. The plan shows that a number of staff have already been recruited since OBC in preparation for the full implementation of the service model and opening of the new facilities in 2008. A transformational change programme will ensure the full delivery and implementation of the Trust service model. The OBC described key workforce assumptions for each of the main professional staff groups and the key workforce issues have been updated and outlined in **Appendix 10J.**

10.18 General Staff Communication – UHBFT and BSMHT

The impact of the Birmingham New Hospitals Project will undoubtedly affect every employee with UHBFT and a large element of BSMHT workforce. The importance of good staff communication and involvement is essential given the size and complexity of the project. Each Trust has continued to communicate with and involve staff throughout the lifetime of this project. Well over 500 staff from both Trusts were involved in the early planning of models of care. Many of these plans are now being translated into the new hospitals and the way those services will be provided.

Communication with staff has been undertaken through a number of mediums in both Trusts. These include:

- News Focus (UHBFT)
- Monthly Staff Brief (UHBFT)
- Staff Briefings (both Trusts)
- Trust Talk (BSMHT)
- Ad hoc meetings
- Open meetings with Consort and HBML

Both Trusts have communication strategies in place and will continue to keep their workforces abreast of project progress and to seek to maintain communication and project involvement with their staff.

10.19 Human Resources Conclusions

- The Trusts have demonstrated an inclusive approach to the involvement of Trade Unions and Staff Representation at all points within the project and will continue to do so throughout the projects lifetime.
- There are plans in place to manage the transfer of employees from both UHBFT and BSMHT through an agreed TUPE process and supporting Transition Plan.
- The impact of not transferring the Soft FM workforce to Haden has been considered. Modernising the workforce working in these areas is currently subject to a Modernisation Plan that will work closely to the clinical transformation program.

- That the transformation of workforce (UHBFT) is being managed and coordinated through a Transformation Team which will ensure that the required clinical changes are achieved and that the appropriate mechanisms are in place to modernise the workforce to deliver the necessary clinical care.
- The Trusts are cognisant of the impact that these new developments will have on the local workforce economy and the Trusts understand the potential impact of other local and regional health care developments will have on their ability to recruit from particular professional staff groups and that the transformation programmes will develop strategies to reduce recruitment difficulties and will work in partnership with other local health care providers in establishing workforce plans to support developing health care provision.
- Staff in both Trusts have been fully engaged in developing plans for the new hospital and models of care and continue to be integral to the project development.

INFORMATION STRATEGY

11.1 Summary

- The proposed strategy provides the supply, management and maintenance of a new managed data and voice network infrastructure to UBHFT for all new buildings and retained estate in the PFI contract, for an initial 12 year period.
- The contract also provides a cabling (passive) infrastructure solution to all of the BSMHT PFI sites
- The strategy facilitates the provision of technology to support NCRS applications and services, all UHBNFT data and voice service requirements, growth in the use of automatic data capture from medical equipment, and the ability for the Trusts to exchange and share information with other NHS and non NHS organisations
- It is compatible with the Government's Connecting for Health strategy for ICT in the NHS as described in 'Information for Health', and 'Delivering 21st Century IT Support for the NHS'
- The strategy supports improvements in the quality and convenience of care by ensuring that the right information is available at the right time, to the right people and in the right place
- It supports the introduction of new models of care through integrated clinical pathways
- It facilitates clinical service delivery requirements in terms of single site working, physical service locations and clinical aggregates, the provision of clinical information on a 24/7 basis

11.2 UHBFT and BSMHT ICT Strategies

The Government's strategy for ICT in the NHS as described in 'Information for Health', and 'Delivering 21st Century IT Support for the NHS', 'make it clear that the whole health economy must move towards a principle of sharing information about patients.

These policies require the Trusts to move towards sharing more information electronically with partners in primary, secondary and tertiary care, so as to minimise gaps in the provision of healthcare.

The key component of the strategy is the NHS Care Record Service (NCRS), which is being developed to support an electronic record of each individual's clinical history through life. Specifically for both Trusts, the NCRS must be developed as a record of that individual's episode(s) of care within their own organisation. The NCRS is being delivered by a new organisation, NHS Connecting for Health (a Special Health Authority), under the auspices of the National Programme for IT (NPfIT.)

In addition, the NHS Plan sets out a need for modernisation of service provision. This modernisation requires improved infrastructure in order to enable better communication in and between organisations, and greater information access which, it is envisaged, will be delivered through NCRS.

Both the Trusts' IM&T requirements and strategies for the future are therefore directly linked with the National Programme for IT (NPfIT) strategy to provide electronic NCRS to the level at which information systems both underpin and support the new models of care required to deliver a modern patient focused, flexible and streamlined healthcare service.

In outcome terms, the key objectives for the NCRS Programme are:

- To improve the quality and convenience of care by ensuring that the right information is available at the right time, to the right people and in the right place

- To implement projects vital to the NHS modernisation programme, using IT to directly improve patient experience, clinical care and efficiency
- To improve the quality of time spent with patients by significantly reducing the administrative burden on clinicians and healthcare professionals

Essentially, the NCRS at Trust level will, over time, provide a live care repository containing all patient records, to which authorised clinicians will have access. The aim is to provide better health care and to help clinicians to transform services by being able to develop patient care pathways, and transmit/share patient details electronically to/with other clinicians involved in a patient's care/treatment plan. This will apply across care settings and organisations.

UHBFT has recently implemented the first element (Phase 1 Release 1) of the NCRS programme which is the replacement of its legacy Patient Administration System (PAS), and this was completed in January 2006.

In the later releases of NPfIT, the software will provide support for order communications, scheduling, and support for care pathways which will help clinicians to provide care and also to transfer information within and across healthcare sectors to improve the continuity of care.

BSMHT has not finalised its NCRS migration plan. It is anticipated that this is likely to be in 2007 when iSoft's Lorenzo product is available. (iSoft is the strategic applications partner of CSC Alliance, the Local Service Provider (LSP) for the North West West Midlands Cluster.)

11.3 ICT Strategies and the PFI

11.3.1 UHBFT ICT Strategy

One of the key themes of the New Hospital business case is the introduction of a new model of care through integrated clinical pathways that are supported by a comprehensive and robust IM&T infrastructure, in turn closely linked to the national IM&T strategy.

This will be delivered in three parts. The first is the ICT infrastructure which is to be procured as part of the PFI programme. The second element is the introduction of the services provided by Connecting for Health such as NCRS, N3 and Choose and Book throughout the Trust. The third element is the Trust's IT Services Department; the Department is responsible for the deployment and support of all PCs and related devices and for the retained portfolio of specialist business and clinical information systems which are needed until suitable replacements are scheduled in the NPfIT.

Note that at the time of writing, the Trust is appraising its options for procuring a Picture Archiving and Communications System (PACS). Following confirmation of the PACS provider from the Local Service Provider, the Trust is waiting for confirmation of final solution and cost implications in order to complete a PACS business case. Once these are provided a business case will be submitted to the Trust which will consider the various procurement approaches which include a Trust only solution, or a shared solution across the Local Health Economy.

11.3.2 PFI Programme

The PFI programme includes the provision of a new managed data and voice network infrastructure for all new buildings and retained estate in the PFI, and includes all associated cabling, ducting and trunking, wiring cabinets, wall outlets and patch cables, active data and voice equipment, and wireless data infrastructure. There is a clear payment mechanism, within the main payment mechanism, defined specifically relating to ICT which has been developed to address the performance requirements of a business critical ICT service.

The ICT Infrastructure for UHBFT which includes the supply, management and maintenance of all data and voice equipment and associated cabling and containment, is ring fenced within

the scope of the PFI project. The ringfencing means inter alia that the ICT element cannot bring about termination of the project and that the payment mechanism deductions related to ICT are limited to the ICT service fee.

The staffing and operation of the telephone switchboard remains the responsibility of the Trust.

Due to the fast changing nature of ICT, the ICT Service is for an initial 12 year period, after which the Trust will go back to the market or consider in house service provision.

Consort will take responsibility for ICT service provision soon after Financial Close.

A preferred ICT contractor was selected in early summer 2004, and Consort and the Trust have worked together to deliver the Payment mechanism, Performance regime, Trust Construction Requirement, Active Equipment Requirement, Interim and Steady State Service Specifications included in the Project Agreement.

In terms of infrastructure and managed services the new build will provide the technology to support:

- The NCRS applications and services
- All retained information systems
- The Picture Archive and Communications System (PACS)
- All Trust data and voice service requirements
- The expected growth in the use of automatic data capture from medical equipment such as patient monitoring devices
- The ability for the Trust to exchange and share information with other NHS organisations
- The continued growth in wireless technology to deliver portable wireless solutions to clinicians

With regard to integration with clinical service delivery requirements, the infrastructure and ICT associated services have been designed to support:

- Single site working
- The delivery of a new model of care on which the New Hospital business case is based
- The work of the New Hospital team with regard to physical service locations and clinical aggregates
- The work of the Trust Clinical Service Development team
- The outcomes and requirements of the numerous clinical user groups that form part of the clinical and new models of care transformation process
- The service levels required to deliver clinical information on a 24/7 basis

11.4 BSMHT ICT Strategy

The BSMHT ICT requirements differ from UHBFT, mainly because the PFI programme is replacing one building out of a total of over 100 Trust sites. In addition, the timetable for NPfIT implementation is not yet agreed and will be dependent on availability of an improved NCRS mental health product.

The PFI programme includes the provision of the cabling (passive) infrastructure solution to the PFI sites. All the active equipment (including telecommunications, data switches and routers) will be designed, built, financed and operated by BSMHT ICT staff and as such will

be outside the PFI ICT scope. The PFI sites will be fully integrated into the BSMHT data network and will be able to fully access all local and national systems.

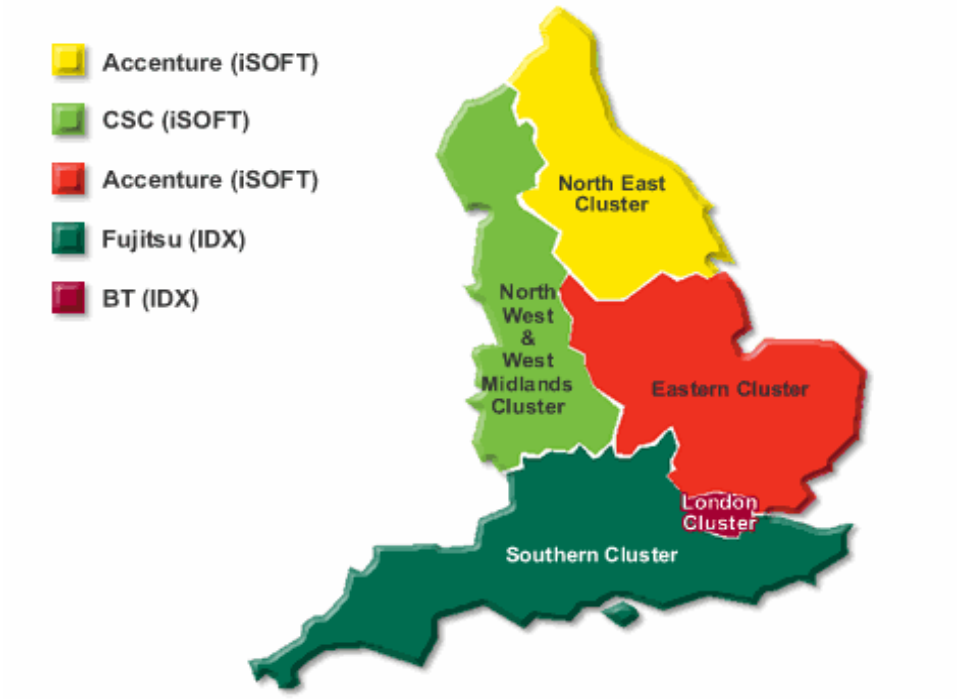
The active element of the voice service will be procured by BSMHT with PFI only cabling (including a multicore copper backbone) will be provided by the PFI provider. The service will be split across the 3 sites and whilst being stand-alone will be fully integrated into the existing BSMHT voice network.

11.5 National Programme for IT

In order to deliver the NPfIT programme the NHS went out to the ICT marketplace in an open procurement for the supply of Integrated ICT systems and services to be delivered across 5 clusters or regions of England. A new Special Health Authority, NHS Connecting for Health (CfH), has assumed responsibilities for implementing the NPfIT.

Both trusts are part of the North West and West Midlands which will have services provided by the CSC Alliance.

Figure 11-1: NCRS Procurement



Key Organisations within the CSC Alliance include:

- iSoft – Core Health Solutions company
- Hedra – Change Management group
- SCC – Infrastructure and Desk Top Support
- In addition other smaller partners include:- SeeBeyond, Torex, Ortivus, IPSL, EMIS, Hewlett Packard, GE, Kodak, and System C

Delivery and monitoring of the NPfIT programme within a cluster is through Strategic Health Authorities which task local heath communities, to deliver the programme implementation within national and contractual timescales.

UHBFT is a member of the South Birmingham Local Implementation Group (SBLIG) which has representation from five South Birmingham health organisations. BSMHT is a member of the Eastern Birmingham and Solihull Local Implementation Group which has representation from 3 health organisations in Eastern Birmingham and Solihull as well as BSMHT which provides mental health services across Birmingham and Solihull. Both LIGs report to the Birmingham and Black Country Strategic Heath Authority (BBCStHA) for the delivery of a co-ordinated NCRS solution within SBHE.

The role of the LIGs is to identify best options for the timing of rollout within the health community as a whole, and to identify the financial and resource implications of delivering NCRS to participating organisations. In addition the LIGs are responsible for identifying any common areas where investment or resources could be shared or offer best value to participating organisations, and working with the BBCStHA to identify both funding for the NCRS implementation and agree the NCRS implementation programme and timescales.

11.6 NCRS in UHBFT

The New Hospital OBC described how the major elements of Electronic Patient Record systems could be built up over time from a number of discrete building blocks. All of the following elements need to be in place to support the opening of the NHP:

- A modern Patient Administration System to support: the scheduling of all appointments; the recording of all patient activity (referrals, attendances and admissions) and the use of a single system to record all communications with patients and referrers
- Electronic communication of requests for diagnostic investigations and electronic delivery of results to clinicians
- New systems in pathology, radiology and pharmacy to support automation and the electronic delivery of requests, reports and results
- Electronic prescribing and drugs administration
- Picture Archiving and Communication System for the capture, storage, display and transmission of digital images from all imaging modalities.

In January 2004 the Trust Board confirmed that the Trust would obtain the first of the above two elements from CfH and that the Trust should continue to roll out the Trust's Prescribing Investigation and Communication system (PICS). The other major elements (pathology, pharmacy and PACS) will be the subject of separate business cases that will be produced in 2006/7 and later. Note that these latter components can be obtained through the Local Service Provider (CSC) but these are not delivered free to trusts by CfH. If the LSP's solution for PACS is adopted, this will come with a degree of pump priming funds from the StHA to support some costs over the first 3 years. The departmental systems replacements for pathology and pharmacy carry no subsidy from CfH.

The delivery of the NPfIT is divided into phases and releases. Although there is some uncertainty about the timing and content of releases after P1R1, the expected timetable is as follows:

Table 11-1 NCRS Timetable		
Milestone	**UHB Project**	**NPfIT via CSC**
1. Phase 1 Release 1 EPR Core PAS replaced by Isoft 'IPM' EPR; connection to the National Care Records Service (the 'Spine') and Choose and Book enabled		Went Live January 06
2. Develop Pharmacy Automation strategy and replace Pharmacy IT system as part	April 05 – Mar 07	
3. Phase 1 Release 2 includes: Order Communications; Initial Clinical data capture eg assessments for Single Assessment Process; consider replacement of A&E, Theatre systems		Sept 08
4. Develop PACS business case; decide if Radiology system is to replaced; rollout to Imaging first; the hospitals second		Dec 06 – April 08
5. Replace Pathology system if support ceases	As required	
6. Rollout of PICS ongoing and completed by	Dec 06	
7. Phases 2 & 3: Further enhancements to EPR eg support for further clinical data capture: Trust Wide Scheduling and Integrated Care Pathways (ICPs)		2007 - 2014

Each of the above 7 project streams will have their own Project Board and together they form the Clinical Information and Automation work stream of the Transformation Programme. All of the project boards report activities, risks and issues to the Transformation Steering Group, the Chief Executive's Advisory Group and other Advisory Groups when appropriate.

The Trust implementation plans and associated expenditure and funding plans for the period to 2010 have now been published and approved by the Trust Board, SBLIG and the BBCStHA NCRS programme board, and the Trust is currently considering a re-planning proposal from CSCA/Cluster for the delivery of Phases from 2006 to 2012 as indicated in the table 11.1 above.

Over the period to 2009 the trust will embark on the implementation of additional functionality as in the table 11.1 above; this includes full order communications systems, the opportunity to replace the Theatre and A&E systems, and the beginning of clinical data capture in areas such as patient assessments. In Phases 2 and 3, further functionality will be deployed across care settings and at this point in time Integrated Care pathways will be supported by 2010.

The Trust timescales for the above implementation projects have been linked directly to the New Hospital build programme to ensure the clinical change benefits of the New Hospital business case are fully achieved.

As mentioned above, the Trust is continuing to rollout a Prescribing Information and Communications System (PICS) which is a rules based drug prescribing and administration system. PICS allows the management of diagnostic investigations and the real time recording by doctors and nurses of the relevant data required to support the clinical management of patients. The rapid retrieval of medication data, medical conditions, diagnoses and investigation results has minimised the time spent by clinicians searching for and assembling patient information, and thereby increases the time that clinicians have with the patient. Significant improvements have also been obtained in the safe management of medicines.

One important area of the NCRS implementation identified by the Trust and SBHE is user training and support. The Trust has invested in additional ICT trainers to develop and deliver the ongoing ICT and NCRS training requirements. In addition when new NCRS applications are implemented in the Trust, the Trust ICT trainers will be supplemented by additional ICT

training resources employed by the South Birmingham IT Training Agency, hosted by UHBT on behalf of the SBHE.

As a result the Trust can continue to undertake general ICT training with dedicated in house ICT trainers, and utilise the specialist NCRS training staff when new products and upgrades to existing products are delivered.

The architecture of the NCRS solution is the responsibility of the CSC Alliance and CfH. If required a diagrammatic illustration of the proposed architecture can be obtained from the North West and West Midlands Cluster lead or the Birmingham and Black Country StHA CIO, and the Shadow West Midlands StHA CIO.

11.7 NCRS in BSMHT

Currently BSMHT uses the Protechnic ePex system, an integrated community and mental health system which meets the Trust's requirements by facilitating access to demographic and some clinical information (such as care plans) across its many sites. The prime objective of migrating to NCRS is to facilitate change in implementing new models of care for mental health services. However this will not be possible until new mental health functionality is included in the NCRS products. This may be provided in P1R2 or more likely Lorenzo which is currently due for release in 2007.

EQUIPMENT STRATEGY

12.1 Introduction

This section outlines the objectives and the overall strategy of the Trusts with regard to equipment. It identifies the scope and responsibility for equipping within The Birmingham New Hospitals Project and how these will be managed by the Trusts through the forthcoming development of the scheme. It also considers the process that will be followed to identify the options available for the provision of equipment and the programme of tasks and timescales required to complete this process.

12.2 Background

In line with the overall objectives of the project, the Trusts prepared an Equipment Specification as part of the FITN tendering process. This document included the Trusts' requirement for a fully Managed Equipment Service for major items of medical equipment. The purpose of this document was to provide the bidders with general information regarding the Trusts' equipment requirements to enable them to make proposals for its inclusion within the overall bid. In addition to being a general clarification and communication document, the Equipment Specification outlined the Trusts' Equipment Strategy including the roles and responsibilities of all parties with respect to the following:

- The supply of equipment to facilitate the achievement of service quality objectives
- The continuous availability of equipment to avoid service disruption
- The ability to keep pace with technological improvements in order to provide high quality diagnostic facilities
- Local provision of services to ensure ready access for patients.

In developing this strategy at an early stage of the project, the Trusts were able to allocate sufficient and appropriate time to development of the equipment specifications with clinical, medical and nursing staff to enable related build and design issues to be resolved. Evidence from other large PFI projects demonstrated the benefits of timely equipment planning and identified the arrangements for the procurement of equipment as a risk issue which required an early solution.

At FITN the Trusts tested whether a managed service for major medical equipment would be affordable and demonstrate value for money within the context of the main PFI procurement. Evaluation of the FITN bids showed that a managed service for equipment was not affordable and did not represent value for money (see Table 12-1 below). As part of the Route to Affordability process both Bidders were asked to submit bids which excluded the Managed Equipment Service.

Table 12-1: Costs of Managed Equipment Service

	Annual Cost of Managed Equipment Service £000
Catalyst	14,100
Project Co*	10,900
PSC**	8,700

**The equipment list costed by Project Co was not complete so their cost shown here is understated.*
***The PSC is based on the first full year of service which is the maximum cost to the Trusts. The difference in annual cost is so great that VFM cannot be sensibly tested.*

There may be several reasons that the project was not able to achieve an affordable Managed Equipment Service:

1. The major equipment requirement is within the Acute Trust. This has a long construction programme of over five years. The changes in technology during this period may be quite considerable. The Trust wished to retain flexibility and choice during this period and this was perceived by the Bidders as increasing their risk and hence costs.
2. The Bidders regard the risk of non-availability of equipment as paramount. This means that they will not consider flexing replacement regimes. The NHS has historically extended the life of assets where it could do so safely.
3. When including equipment within a major build procurement there is always a danger that it is difficult to achieve best value for both elements because the equipment is a relatively small percentage of the scheme and it is difficult to apply competition to this element in isolation.
4. It also became apparent that the Trusts were not benefiting from any risk sharing between members of the Project Coium. In particular, the Project Co bid was fully ring-fenced with all equipment risk passing to Siemens.

The Trusts therefore decided not to continue with the procurement of the Managed Equipment Service under the main PFI. One consequence of this was that during the Preferred Bidder period the Trusts and Project Co had to develop a new matrix for responsibilities associated with equipment. This is shown at Table 12-2. The items remaining in the scope of the project for procurement by Project Co will therefore be categories A and A* items. These are in the main Group 1 and 2 items associated with the construction process. The A* items are those that the Trusts have notified Project Co that they wish to approve in terms of choice of make and manufacturer. For the purposes of this Business Case all other equipment reverts to the assumption that it will be procured by the Trusts from public capital monies.

Table 12-2: Equipment Responsibility Matrix

Category	Supply	Install & Commission	Maintenance	Replacement	Examples
A	Project Co	Project Co	Project Co	Project Co	All equipment and items such as outlets traditionally known as Group 1 or included in Building Notes Specified items of fixed equipment traditionally known as Group 2. All equipment used in the delivery of Hard FM services.
A *	Project Co	Project Co	Project Co	Project Co	As A above, but items that the Trust would wish to be involved in the selection of, e.g. bedpan macerators, patient lifting hoists, service supply pendants, theatre lights.
B	Project Co	Project Co	Project Co	Trusts	Equipment for which the Trust could retain responsibility for life cycling, e.g. Furniture. **Note:** Not used to date.
C	Trusts	Project Co	Project Co	Trusts	Specified items of fixed equipment formally known as Group 2 – not covered in Category A. **Note:** Not used to date.

Category	Supply	Install & Commission	Maintenance	Replacement	Examples
D	Trusts	Trusts	Project Co	Trusts	Furniture and items that will be provided by the Trust e.g. lab fridges & freezers and for which maintenance may be required.
E	Trusts	Trusts	Trusts	Trusts	Educational Teaching Aids Office Equipment Religious equipment.
M	Trusts	Trusts	Trusts	Trusts	Medical equipment
MM	Trusts	Trusts	Trusts	Trusts	Major medical equipment
CAT	Trusts	Trusts	Project Co	Project Co	Equipment that will be used to equip the kitchens.
W	Trusts	Trusts	Trusts	Trusts	Equipment contracted by Trust for patient entertainment.
WD	Trusts	Trusts	Trusts	Trusts	Equipment contracted by Trust for waste disposal services. **Note:** This category may need to be changed to CON to capture any equipment associated with FM Services that are contracted out by the Trusts.

12.3 Equipment Scope and Allocation of Responsibilities

An important element of the equipment planning process was the need to establish in a clear and unambiguous way, the equipment for which Project Co and the Trusts would each be responsible. The Trusts undertook a comprehensive assessment of the existing equipment asset bases. This, together with the equipment replacement programme for 2003/4 to 2008/9 for UHBFT and 2003/4 to 2005/6 for BSMHT, was available as part of the FITN bidding process.

12.3.1 Equipment Categories

The original categories for equipment issued at FITN were as follows:

- Building Contract Equipment (BCE) defined as furniture and equipment that is part of the fabric of the building, and/or is equipment used in all areas, and/or is equipment that may impact on space and/or building services to be provided and/or are engineering installations. Mainly Group 1 and 2 with occasional items of Group 3.
- Contracted Services Equipment (CSE) defined as the equipment used by Project Co to provide the Facilities Management Services and other services that fall within the scope of their Contract as described in the Service Level Specifications. This included all relevant equipment in Group 1, 2, 3 and 4.
- Major Medical Equipment (MME) defined as a range of equipment that is used to provide a clinical service. Tends to be high value (+£30,000), will have implications in respect of space and/or construction/ engineering services and, in many cases, is not mobile and is therefore allied to a particular area or space within the new hospital. Mainly Group 3 items.
- Trust Retained Equipment (TRE) will continue to be supplied and replaced by the Trusts. Much of the equipment in this category is of lower value (less than £30,000), smaller in size and is reasonably mobile. Likely to be Group 3 or 4 in the main.
- Information and Communications Technology (ICT) equipment.

Following the decision to exclude equipment from the main PFI deal, the BNHP team reviewed the system of categories for various types of equipment. The reasons for this were:

- The traditional NHS estates groupings do not provide sufficient information about the assignment of responsibilities (between the Trusts and Project Co) for the supply, installation, maintenance and replacement of medical equipment.
- The Trusts wish to categorise equipment in different ways in order that various procurement strategies can be evaluated.
- The Trusts need to identify those items of equipment that will be supplied as part of the PFI procurement but for which some trust input to equipment selection may be required.

During the Preferred Bidder period a new allocation of responsibilities has been established in terms of procure, supply, install, commission, maintain and replace, as shown in Table 12-2 on the previous page.

A full list of equipment and the allocated category for each Trust will be included in the Project Agreement.

This section outlines the process that has been followed through to preferred bidder stage and the proposed process to be followed to ensure that the new hospitals will be fully equipped at service commencement date.

12.3.2 Lifecycle Assumptions

Project Co will be responsible for the lifecycle maintenance and replacement of all Category A, A* and CAT equipment.

For category D equipment Project Co will maintain such equipment and replacement will be made by the Trusts.

For Trust medical and non medical equipment (Category M, MM and E) maintenance arrangements will be the responsibility of the Trusts.

12.4 Replacement and Technical Refresh Arrangements

The replacement, updating and upgrading of Trust equipment will be the responsibility of the Trusts although Project Co will advise the Trusts if any Trust equipment adversely affects the building, services or Project Co equipment.

Project Co will be responsible for the updating, upgrading and replacement of Project Co equipment, as stated above.

For Category D equipment an economic test will be applied, jointly by the Trusts and Project Co, in order that equipment which is beyond economic repair is replaced rather than subject to ongoing maintenance. Replacement of all such equipment will be the responsibility of the Trusts.

12.5 Risk Transfer Implications

For each aspect of equipment procurement, the Trusts have sought to allocate risk where it can be managed in the best and most cost effective way. Where risk has been transferred to Project Co the Trusts have retained an appropriate level of control or involvement in respect of equipment choice.

12.5.1 Category A Equipment Procurement Process*

Certain items of Project Co equipment have been agreed with Project Co as A* equipment. Although Project Co has total responsibility for this category of equipment, the Trusts will have an element of choice over model and manufacturer for such equipment within the constraints of the cost allowances submitted by Project Co.

The A* items will be supplied by Project Co in the quantities defined by the finished room data sheets (at Financial Close) and the risk on quantity thereafter rests with Project Co. A certain number of higher cost items will be designated DEF and the final quantities will be subject to the variation procedure. The following summarises the procurement process which is described in more detail in Clause 21 of the Project Agreement.

1. The Trusts and Project Co will agree a range of manufacturers and models for each Cat A* item according to a specification and either side will have an option to add to this range up to a point in time before procurement begins (subject to agreement, and various criteria which relate to, for example, reliability of supply and availability of maintenance requirements including spare parts).
2. Project Co will, before commercial close, provide benchmark pricing for these items based on the agreed initial list of manufacturers/ models.
3. Prior to the equipment selection by the Trusts, Project Co will validate their benchmark pricing and make such pricing available to the Trusts.
4. The Trusts will discuss selection with Project Co and will select the preferred manufacturer/model. The Trusts will tend towards standardisation of a Cat A* items.
5. Should the validating prices all exceed the original benchmark prices this will be at Project Co's risk and the Trusts may select the lowest priced item without the need for variation.
6. Where the validating prices are below the original benchmark prices then the Trusts can select without any requirement for variation.
7. If the validating prices are both above and below the benchmark prices there may be a requirement for Variation should the Trusts not select the lowest priced items.

Equivalency is included such that prior to future refreshment the specification is updated to include the same relative standard of technology as was included in the initial procurement, taking into account any advances in technology in the A* items.

12.5.2 The Design Requirements for New Trusts' Equipment

There are a number of key items of major medical equipment (Category MM) that have specific design requirements that need to be taken into account by Project Co when constructing the building. The agreed approach is as follows:

a) The Trust and Project Co have agreed the list of major medical equipment that this applies to, e.g. MRI and CT Scanners.

b) The Trust have provided to Project Co, for each item/type of MM equipment, details of three or four preferred manufacturers and a clear indication of technology type, e.g. in the case of MRI Scanners whether a 1.5 or 3 tesla model is required.

c) Project Co have obtained from the Trust's preferred manufacturers details of models that will deliver the required technology type. This information includes the necessary detail to enable Project Co to identify the associated design requirements for each item/type of equipment to enable the development by Project Co of a generic design that will accommodate any of the models.

d) Project Co were responsible for alerting the Trust to any manufacturer's models that were so significantly different to other manufacturers' models that it would mean a generic design at this stage would not be possible. During the design process

associated with the MM equipment a few items were identified that differed from the norm and Project Co undertook a review with the Trust and the manufacturers of the relevant models to assess whether they could be accommodated or not. Project Co have subsequently been able to confirm that there are no models on the Trusts list for which a generic design is not possible, but that some models may require the manufacturer to adjust their standard equipment configuration to suit the room sizes detailed in the Major Medical Equipment Design Specifications within the PA.

e) For each item of Major Medical Equipment the Trust are required by a given date to deliver to Project Co. detailed specifications of the chosen manufacturer and model and associated programme for the Trust's MME Installation Works the make and model that they require which will then enable Project Co to complete their design for the room/space in which that particular item of equipment will be sited. For Phase 1A this is 12 months prior to prior to Phase Completion Date and for the remainder of the Phases 18 months prior to Phase Completion Date.

This process enables the Trust to leave their final choice of make and model until as late in the construction process as possible, thus reducing the risk associated with early choice and technology development.

12.6 The Physical Transfer of Equipment

This section describes the responsibility for and the process associated with the physical transfer of equipment for each category of equipment.

Items that will physically transfer include medical equipment (M and MM),and categories D, E, W and WD.

12.6.1 Categories A, A and CAT*

Items which are categorised as A and A* will not physically transfer but be supplied new by Project Co. Category CAT equipment will be supplied new by the Trusts.

12.6.2 Category D

The Trusts will be responsible for undertaking the physical transfer of Category D equipment. Because Project Co will be responsible for maintaining Category D equipment, the agreed process associated with this transfer is as follows:

a) The Trusts will maintain their Category D equipment effectively (in accordance with good industry practice/manufacturers recommendations etc) up to the time of transfer.

b) Prior to the first service commencement a condition survey will take place to determine transfer quantity, and that equipment for transfer is suitable - i.e. meets the transfer criteria described in the "Requirements for Equipment Provided by the Trusts" detailed in Schedule 13 of the PA.

c) The Trust may replace equipment that does not meet the transfer criteria or alternatively buy this new for the new scheme.

d) The Trust will provide service histories, warranty/guarantee and maintenance contracts for such equipment to Project Co and Project Co will manage maintenance contracts if any.

e) The Trusts will annually provide Project Co with an updated list of Category D equipment.

12.6.3 Categories M, MM & E, W and WD

The Trusts will be responsible for undertaking the physical transfer of Categories M, MM, E, W and WD equipment during:

a) The initial transfer from existing accommodation to the new super hospital and retained estate.

b) In any subsequent decant moves during the phased handover of the new super hospital and retained estate.

c) In the steady state

This physical transfer process will include de-installation, de-commissioning, physical transfer, re-installation and re-commissioning of any equipment and/or furniture as required.

12.7 Equipment Procurement Process

This section describes the procurement of equipment not being provided as part of the main PFI scheme (including equipment to be purchased prior to and in parallel with the scheme).

The major equipment expenditure will be incurred in the acute Trust. **Appendix 12A** demonstrates that the Trust will be able to manage this expenditure within its cash flows under the current Foundation Trust regime. Appendix 12B shows the detailed equipment requirements that have been assumed in the Full Business Case.

The working assumption is that the Trusts will procure equipment themselves with public funding. Because of the long construction period, procurement of the equipment for UHBFT will not commence until late 2007. BSMHT will commence procurement during 2006/07. The Trusts will monitor changes in equipment requirements during the intervening period and will plan to augment their procurement capability at the relevant time. However, the Trusts wish to test Value for Money by considering their options for the procurement of equipment through alternative routes and propose to compile a Business Case immediately following Financial Close. The key tasks that will be undertaken to inform this Business Case are as follows:

- Taking account of the availability of Exchequer and non Exchequer funding, to review options for procurement through conventional purchase, lease and managed equipment services. There may also be innovative opportunities available owing to the foundation status of the acute Trust.
- Further development of the Equipment Strategy, exploring the options available to the Trusts, accommodating existing equipment and analysing forecasts of future activity, taking into account clinical developments and technologies.
- Particular consideration will be given to market conditions and current Managed Service issues. Deliverability of the equipment options will be of key importance. A full option appraisal and evaluation exercise will be carried out to select the preferred route for procurement. Financial and non-financial criteria will be used and the whole process will be documented and auditable.
- Preparation of an outline business case for equipment provision to seek approval for the preferred option(s). Subsequently the necessary tender process will be undertaken with the required documentation to include lead in times, scheduling and how orders will be progressed, received, stored and delivered for the project and demonstrating how value for money will be achieved.

12.8 Installation and Technical Commissioning of New Items of Trust Equipment

The installation and technical commissioning of new items of Trust Equipment will occur in the five operational commissioning periods following each of the Practical Completion dates.

12.8.1 Phase 1A

The operational commissioning period following the first Practical Completion date will concentrate on the installation and technical commissioning of the high technical capability

equipment areas of the hospital, viz. inpatient and outpatient imaging and cardiac catheter laboratories. Because of the complexity of this task, the operational commissioning period for this phase has been extended to four months. This means that the unitary charge will commence after two months, but for those rooms where Finishing Works are required to be undertaken by Project Co following installation of equipment, a deduction regime will apply.

The four month commissioning period for Phase 1A has dramatically reduced the overall likely requirement of the Acute Trust for beneficial access to install its Category MM equipment. There is, however, a mechanism within Schedule 13 which enables the Trust to request the consent of Project Co, the Contractor and the Funders to the Trust taking access prior to the Phase/Zone Completion Date for the purposes of placing, storing, installing, testing, commissioning and/or setting to work Category MM equipment should this requirement arise. This mechanism would apply to the remaining construction phases as detailed in 12.8.2 below.

12.8.2 Phases 1, 2, 3A & 3

The installation and technical commissioning of new equipment in the remaining phases will, in the main, be undertaken during the two-month period designated as the Trust's operational commissioning period following Practical Completion of each construction phase.

12.9 Finishing Works following installation of new and transferring Equipment

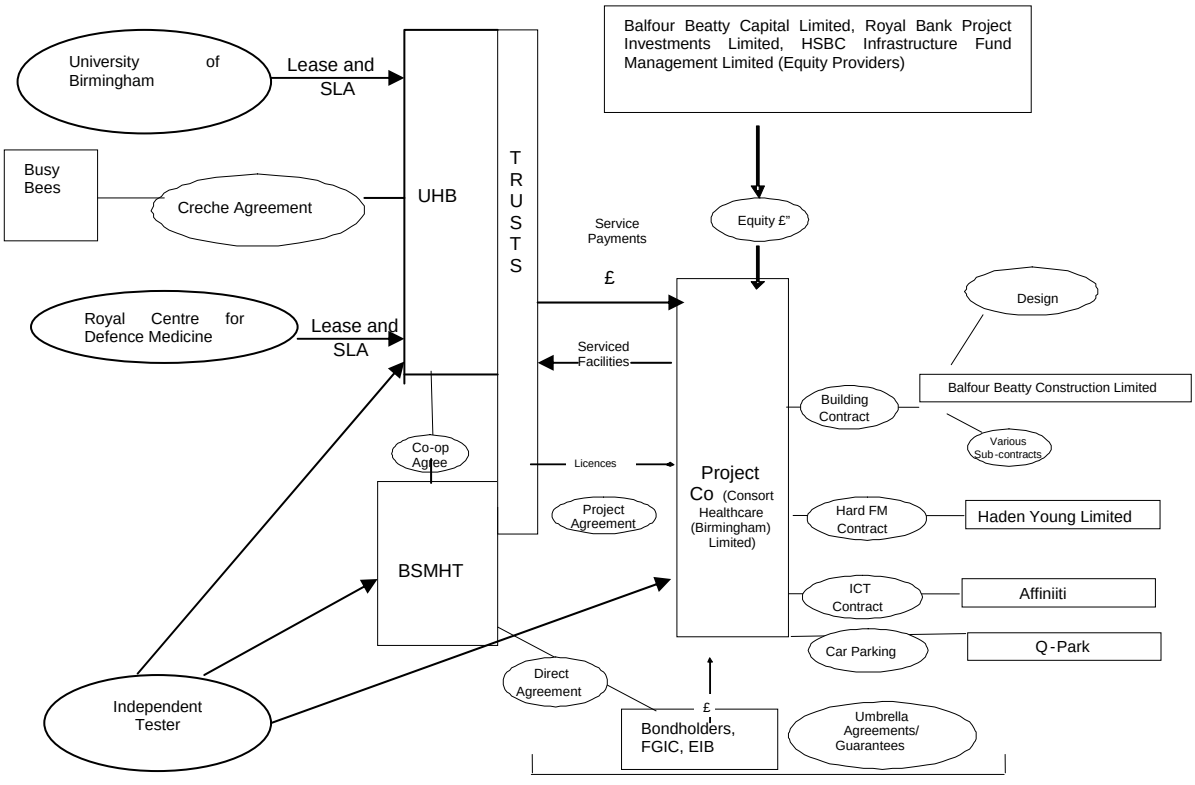
Within 20 days of receipt of the information detailed in 12.5.2e) above, Project Co will provide a programme for the Finishing Works for each Phase. The Phase Finishing Works Programme will specify an overall Finishing Works Completion Period of not more than 12 weeks from the date of commencement thereof and Project Co are obliged to undertake the Phase Finishing Works Programme within this designated period.

SUMMARY OF CONTRACT STRUCTURE

13.1 Overview

- The Private Finance Unit ("**PFU**") NHS Standard Form version 3 ("**SF3**") contract is being used for the Birmingham New Hospitals project ("**BNHP**").
- The contract structure recognises the interests of all parties to the agreement, including the funders, sponsors and the various sub-contractors providing services to the Trusts.
- Some parts of the Project Agreement have been tailored to the particular requirements of the BNHP project. Some Clauses and related Schedules have also been amended from the published standard form to reflect either genuine project specific requirements or Government policy. All variations from the published standard form have been approved by PFU.
- The full redevelopment of the Trusts' sites includes some elements that remain outside the Private Finance Initiative ("**PFI**"). The contractual relationship of these elements is illustrated to provide a complete picture of the legal structure of all related developments.

Figure 13-1: Summary of Contract Structure



13.2 Standard Form

The Project Agreement has been developed on the basis of the SF3 contract and the additional provisions introduced by the PFU in May and July 2004. The agreement has been developed in consultation with the PFU and follows the standard form (as developed) save in respect of the project specific and other issues identified in this section.

The Project Agreement envisages the creation of a SPV by Consort Healthcare (Birmingham) Limited, which is referred to within this section as "**Project Co**".

13.3 Main Project Specific Issues

The standard form has been adapted to reflect:

- that two Trusts (University Hospital Birmingham NHS Foundation Trust ("UHBT") and Birmingham and Solihull Mental Health National Health Service Trust ("BSMHT")) (each being described in the project agreement as the "Relevant Trust") are parties to the Project Agreement. The rights and obligations of each Trust are separate and there are separate payment streams with separate service failure regimes applicable to them. The Project Agreement also includes provisions allowing for partial termination;
- the use and development of various Retained Facilities on the site together with an element of Mothballed Estate has necessitated project specific drafting in relation to both works and services at the same;
- that this is not a green field site development and so arrangements have to be put in place to manage the risks associated with construction on a brownfield site and around a working hospital;
- that the main site is affected by a number of complicated title and access issues;
- the agreement reached between the Trusts and Project Co on equipment and ICT;
- that responsibility for the Services for which Project Co will carry out is assumed over 3 phases for BSMHT and 5 phases for UHBT. There are two interim service start dates. The first in relation to BSMHT is three months prior to practical completion of the Mental Health facilities (excluding Moseley Hall and in relation to UHBT, the start date is six months prior to practical completion of Phase 1a, (to take place on 3rd September 2007 and 24th May 2009 respectively based on a financial close date of 24th January 2006).
- that in addition to constructing facilities and providing services on the Queen Elizabeth Medical Centre site ("QEMC") Project Co will also be constructing facilities and providing services for BSMHT at Showell Green Lane;
- agreements will be in place with the University of Birmingham and the Royal Centre for Defence Medicine which relate to the provision of facilities to these entities in the new PFI facilities at QEMC. In each case, the main project specific issue is that of a Foundation Trust backing off its Project Agreement obligations to entities to which it is contracting to provide services. As such, there are no SF3 issues arising;
- that a temporary (and, once its construction has been completed, a permanent) crèche will be provided and funded by Busy Bees in place of the current nursery provider, Teddy Bears. The Trust will not be paying for the crèche and Busy Bees will be paying only a peppercorn rent. There will be a direct agreement between the Trust and Busy Bees who will not be a Trust Party during the construction phase.

13.3.1 Project Specific Features not included in NHS Standard Form version 3 Project Agreement

Table 13-1: Project Specific Features not in NHS Standard Form V3

Standard Form Assumptions or Issue	BNHP characteristics
Two Trusts	Drafting has been included to reflect the two trust procurement as follows: 1. It has been necessary to introduce the concept of the "Relevant Trust". 2. The Trusts will jointly appoint a single Works Representative and will each have their own Operational Representative once interim services are being provided to BSMHT (in the case of BSMHT) and after the final Actual Phase Completion Date (in the case of UHBT). 3. Each Trust will have a separate payment stream. 4. Each Trust has its own cost sharing arrangement in relation to Changes in Law. 5. Partial termination provisions (which also mean that project specific drafting has been incorporated into Schedule 23). 6. There is an acknowledgement that if one Trust is alone responsible for a Delay Event or an Excusing Cause, it may be necessary for the other Trust to grant the relevant relief where it is that Trust's part of the Project that is affected by the event in question. 7. A Co-operation Agreement (Schedule 36 to the Project Agreement) has been developed in order to deal with issues between the two Trusts which are not dealt with in the Project Agreement with Project Co.
Clinical Functionality	A definition of Clinical Functionality has been incorporated which reflects the Design Development Protocol.
Interface	BNHP does not include the provision of soft services, which are retained by the Trusts. In order to provide some protection to Project Co in respect of Trust activities which may affect Project Co's lifecycle obligations, the Trusts have agreed to comply with manufacturer's requirements and recommendations in relation to cleaning finishes.
Market Testing	The only services that will be subject to market testing are security and car parking.
Retained Estate	A zonal solution in relation to the Trusts' Retained Estate is included within the contract documentation at Schedule 8 Part 9 (Works) and Schedule 14 (Services). Details of new build, refurbished estate and mothballed estate requirements are

Table 13-1: Project Specific Features not in NHS Standard Form V3

Standard Form Assumptions or Issue	BNHP characteristics
	included within the documents.
Hospital developed as a Greenfield site	The facilities comprise mainly new build and with an element of refurbished premises. The PA is required to reflect the risks of managing construction and providing the facilities around and within a working hospital. These are described in Schedules 8 and 12. At present, there are restrictive covenants which affect the Site. However, the amendment of these was achieved prior to financial close.
Adverse Footprint Ground Condition	The Trusts are to take the risk upon the discovery of an adverse ground condition under the footprint of specified buildings.
Contamination	Given that some of the contamination issues are outside Project Co's control, the Trusts have retained the following risks which are either within their control or appropriate for the Trusts to retain on a value for money basis: (a) Asbestos on the Site (or in buildings) as at Financial Close or which is brought onto Site after that date (unless Project Co is in control of that part of the Site); (b) Japanese knotweed and giant hogweed unless dealt with under the terms of an agreement between UHBT and Balfour Beatty entered into prior to Financial Close; (c) Contaminated ground under the footprint of specified buildings; and (d) Contamination in specified buildings The Trusts will be responsible for dealing (at their own expense) with all Trust Contamination (present on the Existing Facilities) and will indemnify Project Co regarding the same. The scope of the indemnity is limited to Project Co's Direct Losses (as defined in the Standard Form) and Project Co would be obliged to mitigate its loss under Clause 67. Please also refer to "Site Conditions" in Table 13.2.
Asbestos	Provisions outlining the parties' responsibilities in relation to asbestos are included at Clauses 15.8 to 15.11. Briefly, the Trusts retain responsibility for all asbestos on the sites as at the time when control of the Site passes to Project Co. This will take place as the relevant area is surrendered to Project Co in order to carry out the Works, at which time Project Co's security arrangements will commence and the risk in any new asbestos being introduced will pass to Project Co. The Trusts will be responsible for dealing (at their own expense) with all Trusts' Asbestos (defined to refer to asbestos on the

Table 13-1: Project Specific Features not in NHS Standard Form V3

Standard Form Assumptions or Issue	BNHP characteristics
	Existing Facilities or brought on or introduced by the Trusts or a Trust Party or a third party subject to specified exclusions) and will indemnify Project Co regarding the same. The scope of the indemnity is limited to Project Co's Direct Losses (as defined in the Standard Form) and Project Co would be obliged to mitigate its loss under Clause 67.
Practical completion occurs after a single phase	The phasing is complex requiring sophisticated commissioning and practical completion arrangements. Following completion of the construction for each phase there will be a two month period during which the Trusts' commissioning will take place (apart from phase 1a where the commissioning period is four months). Payment will commence two months after the beginning of the Trusts' commissioning in relation to all Phases. It is anticipated that the majority of the Trusts' commissioning will have been completed by the time that payment commences although it will require most of the 4 month period to install its equipment into Phase 1a. The commissioning of the ICT Service will take place in the two month period following construction completion. Interim Service Payments will fall due from the Interim Services Commencement Date.
Energy	The energy drafting in Clauses 17.3 to 17.5 differs from SF3 in the following ways: 1. Clause 17.3 – the two year monitoring period commences on the first day of the first calendar month six calendar months after the final Actual Completion Date; 2. the drafting relates to the "Hospital" (i.e. the new acute facilities). Clause 17.5 provides for the drafting to apply to the Mental Health Facilities and the Showell Green Lane Facility as appropriate; 3. the "Energy Efficiency Target" is defined and differs depending on whether it applies to the Hospital or Mental Health Facilities and the Showell Green Lane Facility and assumes no Weather Impact (i.e. a change to the twenty year average temperature data for 2004); 4. investigation of any failure to meet the Energy Efficiency Target is set out in paragraph 22 of Part 7 of Schedule 8 (Construction Matters); and 5. lump sum compensation shall be calculated using a relevant Treasury discount rate. The operational energy and carbon trading drafting preceded SF3 but is substantially the same in content.

Table 13-1: Project Specific Features not in NHS Standard Form V3

Standard Form Assumptions or Issue	BNHP characteristics
Payment commences at the conclusion of a single phase	UHBT will pay to Project Co the Capital Works Sum towards capital expenditure in relation to the parts to be occupied by the University of Birmingham. This bullet payment will be funded by the University. This sum is not index linked. UHBT will pay interest for late payment under the Project Agreement but can claim this back from the University of Birmingham under Clause 18.11 of the agreement with the University. There will be no bullet payment arrangement with the MoD. There will be a pass through of the cost for the relevant area from the MoD to UHBT. Under the RCDM Agreement MOD agrees to indemnify UHBT from losses arising from its own actions and defaults only, and will not indemnify the UHBT in the same terms that UHBT indemnifies Project Co (e.g. for death or personal injury claims in respect of MOD employees notwithstanding any fault on the part of Project Co or the Trusts). UHBT does therefore not fully pass on to MOD such obligations which it assumes towards Project Co. The reason for this slightly different treatment is partly that MOD will be self insuring. It is not felt that the difference between the PA and RCDM agreement positions on this point is material. Please see section 13.4.1 for more detail on payment.
Equipment provisions are at the discretion of the Trust	Project Co will supply, install, commission, maintain and (where appropriate) replace Project Co Equipment. This includes Category A Equipment and Category A* Equipment**.** Each of the Trusts will supply, install and commission (other than Transferring Equipment) and maintain the Trust Equipment. Trust Equipment comprises of each of the Relevant Trusts' Category D, M and MM Equipment. Please see section 13.4.2 for more detail.
Trust warranties are limited to financial obligations and vires issues	Some limited warranties are given to the Trusts by Project Co, covering the following issues: • Project Co not having traded since incorporation; • Project Co having no material financial obligations; • Project Co information at Schedule 27 being true and accurate and there being no other arrangements outstanding; and • Project Co's memorandum and articles of association being true and accurate and there being no outstanding proposals to amend these.
Indemnities	The indemnity provisions conform with SF3.

Table 13-1: Project Specific Features not in NHS Standard Form V3

Standard Form Assumptions or Issue	BNHP characteristics
	In addition, if an Excusing Cause occurs which affects the performance of the Car Parking Services and the Retail Outlets, the Trusts will pay to Project Co amounts equal to shortfalls in modelled income. The definition of what constitutes an Excusing Cause has also been expanded to address project specific issues. Further details appear at Clauses 8.6 and 8.7 of the Project Agreement.
The standard form is silent on the provision of retail services within the hospital through a lease	UHBT shall grant a Retail Head Lease of the Retail Areas to Project Co. Sections 24 to 28 of the Landlord and Tenant Act 1954 are to be excluded. Areas where retail activity is to take place have been identified. Drafting is included in Clause 14 with respect to the fitting out and opening of the Retail Areas for trade by the retail sub-tenant. The underletting of any part of the retail units is subject to UHBT's consent, but such consent is not to be unreasonably withheld or delayed. There are also restrictions against what the space can be used for. The Unitary Payment has been adjusted to take an assumed rental figure into account. Therefore UHBT neither gains nor loses financially by the occupation of the units. There is no specific obligation in the lease for the Tenant to keep the Property in a good state of repair and condition until the Property is yielded up at the end of the term of the lease. However, there is an obligation for any undertenant's to keep the Property in a good state of repair and condition. There is a small risk to the Trust that if there is a void period in the underletting of any part of the Property during the Term, then no-one is responsible for keeping that part in a good state of repair and condition. However, this risk is practically reduced by the need for the Tenant to keep any void periods to a minimum to maximise its income
Insurances	In accordance with SF3, Project Co is required to effect and maintain a comprehensive programme of required insurances. Such policies are detailed within Schedule 21. SF3 Clause 36 relating to the required insurances and an approved Insurance Cost Sharing mechanism (set out in Parts 3 and 4 of Schedule 21) are included with no additional risk or contingency premium required in respect of the latter. In relation to premium costs sharing, PFU has approved the use of the model used on the Manchester PFI scheme.
Maintenance (Clause 28)	Clause 28 has been amended to cater for ICT Maintenance (which is a separate service from general maintenance). Clause 28.7 has been amended on a project specific basis to clarify

Table 13-1: Project Specific Features not in NHS Standard Form V3

Standard Form Assumptions or Issue	BNHP characteristics
	that where a Trust requires Project Co to accelerate maintenance, a delay in the Trust's response regarding an amendment to the programme which is not received by Project Co within 5 Business Days prior to the original date scheduled to carry out the programmed maintenance, this will not result in penalising Project Co for failing to comply with the original programme. Clause 28.8 has not been changed (save for ICT Maintenance references which are project specific).
Employment matters (Clause 30)	Employment matters are in relation to the Hard Facilities Management only and therefore there are no Retention of Employment issues. Clause 30 is based on the appropriate Standard Form 3 drafting (please see section 13.4.7 below). However, some clarificatory amendments have been made as have some changes that were needed to reflect the project specific staged introduction of services.
Retail Prices Index (RPI) applies to the entire unitary payment	Confirmed.
Payment Mechanism. The principle of "no hospital, no fee" applies	Save as set out below, the principle is followed including in respect of equipment for which Project Co is responsible. In respect of ICT, the principle of "no service", no payment applies but the deductions relate solely to the ICT Service Payment and do not impact on the deductions/payment mechanics relating to the other Services. Following completion of the construction for each phase there will be a two month period during which the Trusts' commissioning will take place (apart from phase 1a where the commissioning period is four months). Payment for all Phases will commence two months after the beginning of the Trusts' commissioning. In relation to areas affected by Project Co's remediation work following installation by the Trusts of items of major medical equipment, if such remediation work falls within the agreed programme, an excusing cause will be granted in relation to such works. However, if the works take place outside the programme, the Payment Mechanism will apply in respect of any Unavailability or failure to adequately perform the Services (Clause 17.14 of the Project Agreement). The Trusts will take the risk of its own commissioning not having been completed by the expiry of the 4 month period. Interim Service Payments will fall due from the Interim Services Commencement Date. The payment for ICT services is a ring-fenced and separate element of the payment mechanism. If no ICT service is received then no ICT Service Payment will be made with the maximum deduction being the entirety of the ICT service payment (which in

Table 13-1: Project Specific Features not in NHS Standard Form V3

Standard Form Assumptions or Issue	BNHP characteristics
	context is £1.2m per year on a total service payment of circa £45m). If the non-availability of ICT services rendered large parts of the hospital (this is a UHBT service only) unavailable, no further deductions would flow. Given the size of the ICT service provider it was not possible to pass greater risk on to Project Co
The hospital is developed as a single entity from which all services are delivered	Project Co will construct and provide services to the new QEMC and the new psychiatric hospital. It will also provide services in the Retained Estate. Project Co will also provide services at the Showell Green Lane site during the operational period. Interim Services shall also be provided.
Buffer Zones	In some areas of the facilities, because of the complicated decanting process, it has not been possible to allow for the inclusion of buffer zones, which are areas with immediate proximity to construction areas and which are normally kept unoccupied. The absence of buffer zones in these areas will be taken into account when assessing Project Co's compliance with its construction obligations.
Project Co is given the right to carry out works and services on the site by means of a licence	The SF3 contract debtor approach utilises licences except in relation to retail operations. If the Trust's replies to enquiries (or their responses to the certificate of title questionnaire) raised by Project Co regarding areas are incorrect or inaccurate, there is potential for the same to constitute an Excusing Cause, Delay Event or Compensation Event as appropriate.
The Independent Tester is jointly appointed by Project Co and the Trusts according to Schedule 15	The Independent Tester will be appointed in accordance with Clause 20 and Schedule 15. There is a separate testing regime for Retained Estate at Schedule 8 Part 12. A Collateral Warranty is to be provided (at Project Co's cost) for the Funder and Contractor's benefit. The key project specific amendments in relation to the Independent Tester Contract are (a) 50:50 shared payment of fees between the Trusts and Project Co; (b) the grant by the Independent Tester of a collateral warranty to the Funders, Contractor and Service Providers; (c) termination rights granted to the Independent Tester which arise due to material breach by the Trusts or Project Co; and (d) step-in by a Non-Defaulting Party following notice from the Independent Tester of its intention to terminate. Schedule 1 (Scope of Services) has also been amended on a project specific basis.

Table 13-1: Project Specific Features not in NHS Standard Form V3

Standard Form Assumptions or Issue	BNHP characteristics
Trusts' Representatives (Clause 11)	The Representatives of the Trusts are distinguished between the representatives acting for UHBT and BSMHT respectively until the Actual Completion Date (the "**Trusts' Works Representative**") and the representatives acting for UHBT and BSMHT respectively from the Actual Completion Date (in the case of UHBT) or the commencement of interim services (in the case of BSMHT) until the Expiry Date (the "**Operational Representative**").
The standard form is silent on the issue of Trusts' Room Data Sheets	UHBT shall provide Project Co with UHBT's RDS Information in respect of each Functional Unit identified in the Zone 1 Accommodation Schedule (i.e. Retained Estate) and the Room Data Sheet. Project Co shall produce a Room Data Sheet ("**UHBT's RDS**") which UHBT shall verify. Project Co shall be entitled to make representations to UHBT in relation to UHBT's RDS. Project Co will need to know the state of each room before they enter to undertake the relevant works. If there are any inconsistencies in the actual room conditions or performance levels and the Trusts' RDS, a Trusts' Service Variation shall be initiated where the information provided by the Trust is incorrect.
Project Co Event of Default	The events which constitute an Event of Default comply with the standard form, but the clause includes provisions allowing for partial termination. Each Trust may exercise its rights acting alone where Project Co is in breach in relation to the Relevant Trust or both Trusts may act together where the breach occurred in relation to each of the Trusts. The Project Co Events of Default which are ringfenced and do not lead to termination of the Project relate to the ICT, Interim Services, Zone 2 and mothballed estates Services. Additional remedy provisions are included which provide for when only one of the Trusts terminates the Agreement. Further drafting is also included in relation to the replacement of a non-performing Sub-Contractor and Additional Maintenance Service Events of Default.
Replacement of a non-performing Sub-Contractor	The drafting has been amended to provide for the two Trusts, partial termination and termination in relation to the relevant Service (excluding the ICT Services and Interim Services) in respect of the Relevant Trust only. • The maximum number of Service Failure Points to be awarded against each Service is set out in the Project Agreement. Where an Applicable Service Provider has been replaced, any Service Failure Points awarded in respect of the Service to the replaced Service Provider shall be disregarded, but this

Table 13-1: Project Specific Features not in NHS Standard Form V3

Standard Form Assumptions or Issue	BNHP characteristics
	relaxation will not apply in respect of more than two replacements of a Service Provider. (This position is broadly consistent with the position contained in the Spence Letter). • In addition, if the Estates Service Provider is replaced, any Service Failure Points awarded in respect of the Estates Service to Project Co shall be disregarded, but this relaxation will not apply in respect of more than two replacements of the Estates Service Provider. If UHBT exercises its right to terminate a Service Contract or Sub-Contract, Project Co is entitled to terminate the Service Contract or Sub-Contract in its entirety and to procure a replacement but is not entitled to terminate the same in its entirety where BSMHT has exercised its rights requiring such termination, unless UHBT requires such election by written notice within a stipulated timescale.
Trust Events of Default	This is compliant with standard form but in addition, if Project Co partially terminates the Agreement in relation to one Trust only, the non-defaulting Trust shall be deemed to have served a Variation Enquiry in relation to the defaulting Trust only. The non-defaulting Trust will be responsible for any termination payments under the Project Agreement, (such sum and other costs and expenses incurred by the non-defaulting Trust as a result of the Variation Enquiry to be recovered from the defaulting Trust in accordance with the Co-operation Agreement). Trust events of default have been extended to the non payment of the capital amounts payable under Clauses 35.24 and 35.26 in respect of the CSEC and Nuffield House.
Partial Termination	The Project Agreement currently allows for partial termination. This means that, faced with a Project Co Default, only one Trust could terminate the Project Agreement to the extent that it applies to that Trust, leaving the arrangements in place for the other Trust. However, Project Co has the right to terminate the remaining Project Agreement if the partial termination right is exercised by UHBT. Similarly, Project Co has the option to partially terminate the Project Agreement in the face of a Trust Default. Under such circumstances, it also has the right to trigger a Variation so that it is compensated by the remaining Trust for the effects on Project Co of the partial termination. Partial termination is not allowed during the construction of the Mental Health Facilities and the Showell Green Lane Facility
Design Development	Some definitions have been amended on a project specific basis, for example, there is a new definition of "Reviewed Design Data" as some items will have been approved by the Trusts at financial

Table 13-1: Project Specific Features not in NHS Standard Form V3	
Standard Form Assumptions or Issue	**BNHP characteristics**
	close. A project specific protocol is set out in Part 2 of Schedule 10 (Review Procedure). The procedure is relevant to Zone 1 (Retained Estate) and sets out the procedure for submission and endorsement with "comments" or "no comment", further information reasonably required from the Trusts by Project Co, specific grounds for objection, the effect of the review and document management.
Variations	A new Schedule 44 has been added comprising an Anticipated Variation Procedure. The Works and Services in relation to the Moseley Hall Services (BSMHT Anticipated Variation) may be included in the scheme as an anticipated variation following financial close but have been taken out at present. The requirements for the Works and Services in relation to Nuffield House are included at present but may be taken out of the scheme following financial close (UHBT Anticipated Variation). Please refer to paragraph 13.4.15 for further detail.

13.3.2 The standard commercial terms in the Project Agreement

The standard commercial terms are confirmed as follows:

Table 13-2: Standard Commercial Terms	
Item	**Description**
Bond Finance	The project will be funded using a bond, which will be backed by a monoline insurer. Amendments have been made to Schedules 6, 23, 29 and 34 to reflect this funding structure.
Change in Law	The Trusts bear NHS specific risk and PFI discriminatory risk unless reasonably foreseeable. The Trusts agreed in the Preferred Bidder Letter that the risk of general legislative change should be borne by Project Co, up until completion of Phase 3 and not for the full period, given the length of the construction period. The relevant definitions comply with SF3. See section 13.4.3 below regarding ICT Change of Law.
Relief Events and Delay Events	The definition of events where neither the Trusts nor Project Co are responsible and the consequent cost sharing arrangements comply with the standard form Project Agreement with the addition of an Adverse Footprint Ground Condition. Clause 41 (Delay Events) includes project specific Delay Events in addition to SF3 which include site access, certain of the Excusing Causes (to recognise the potential impact of Excusing Causes on subsequent construction phases) and the occurrence of

Table 13-2: Standard Commercial Terms	
Item	**Description**
	circumstances described in Clause 15.4 (relating to unforeseen ground conditions and/or Contamination). Project specific relief provisions relating to Zones 1 and 2 of the Retained Estate are included.
Force Majeure	Force Majeure events are limited to SF3.
Planning permission	Project Co has obtained full planning permission for the development at its own expense. The Trust also has some responsibility to meet some of the planning conditions, however, this is envisaged within the footnote to SF3 and, therefore, the planning drafting has been developed on a project specific basis. See the Appendix to this Section 13 which sets out the latest version of the planning report.
Site Conditions	Please see "Contamination" and "Asbestos" cells in Table 13-1.
Fossils and Antiquities	In the event of a discovery, they will remain Trust property and Project Co must take all necessary steps to keep them in the position and condition in which they were found. This is standard form drafting. The discovery of Fossils and Antiquities will be a Compensation Event.
Quality Assurance	Project Co shall procure that all aspects of the Project Operations are the subject of quality management systems. Project Co shall maintain a quality management system, which may be audited.
Performance Monitoring	The Performance Monitoring scheme is compliant with SF3. Project Co shall procure that all Project Co Parties comply with the Service Requirements and Project Co will monitor its performance of the Agreement during the Operational Term.
Facilities Services	Hard FM services are provided by Haden Young. The Active ICT Service is provided by Affiniti (part of Kingston Communications). Separate Estates Maintenance Service regime for the Zone 2 and Mothballed Estate elements together with their security arrangements is included at Schedule 14.
Hand back procedure	On the Expiry Date, each element of the Facilities shall be in a condition which is consistent with due performance by Project Co of the Service Level Specification and Method Statement, and with the Facilities and each of the elements having been designed and constructed in accordance with the applicable design life requirements.

13.4 Customised Parts of the NHS Standard Form Project Agreement

13.4.1 Payment Phases

UHBT will pay the Capital Works Sum to Project Co in respect of the capital expenditure to be incurred by Project Co in relation to those facilities to be occupied by the University of Birmingham. The Capital Works Sum will be paid on the date set out in Clause 35.24 of the Project Agreement. Interest will be payable by UHBT on any late payments of the Capital Works Sum instalments. The funds for this will be paid to UHBT by the University.

13.4.2 Equipment Arrangements

The type and quantity of equipment is detailed in Schedule 13.

The Project Co Equipment comprises Category A Equipment and Category A* Equipment and Project Co will be responsible for the supply, installation and commissioning of such equipment in the relevant Zones in the Facilities in accordance with the Programme, Trusts' Construction Requirements, Project Co's Proposals and the provisions of Clause 21.

The Trust Equipment comprises BSMHT Equipment (comprising BSMHT Category D Equipment, BSMHT Category E Equipment and BSMHT Category M Equipment) and UHBT Equipment (comprising UHBT Category D Equipment, UHBT Category E Equipment, UHBT Category M Equipment, UHBT Category MM Equipment and UHBT Category WD Equipment).

The Trusts are responsible for the transfer, supply, installation and commissioning of the Trust Equipment in accordance with the Programme and to maintain the same in accordance with the provisions of the Project Agreement.

Project Co must maintain the Category D Equipment as part of the Estates Service in accordance with Schedule 14 (Service Requirements) and the relevant provisions of Clause 21. Separate drafting provides for maintenance of Category D Equipment by the Trusts until the first Service Commencement Date in accordance with Good Industry Practice in no worse a condition than at the date of the Project Agreement (subject to reasonable wear and tear).

Project Co shall supply technical, operating and user manuals and provide training relating to Category A and Category A* Equipment. The drafting provides for criteria for and selection of and tendering for such equipment. Separate drafting provides for selection and replacement of Category CAT Equipment.

Without prejudice to Project Co's obligation to provide the Security Service, the Trusts shall and shall procure that the Category A* Equipment is kept in a clean and secure environment and that it is cleaned, operated and used in accordance with all relevant operating instructions and manuals and Good Industry Practice. Project Co will retain the maintenance responsibility for all Category A* Equipment.

BSMHT and UHBT shall each supply to Project Co the Relevant Trusts' Category C Equipment to be installed in specified phases by Project Co into the Mental Health Facilities, Showell Green Lane Facility and Moseley Hall Facility as appropriate. The Relevant Trust shall replace Category C Equipment when its repair or maintenance becomes economic.'

The Trusts shall remain the owners of their respective Trust Equipment and Trust Excluded Equipment.

Clause 21 sets out a selection procedure in relation to Column 1 Equipment (comprising Category A* Equipment listed in Column 1 of the Table in Section 2 of Part A of Schedule 13A (as regards BSMHT) and Schedule 13B (as regards UHBT)), including the criteria for accepting such selection and benchmarking the price in respect of the same.

Replacement Category A* Equipment will be selected and procured by Project Co to meet the Updated Relevant Specification.

Changes to Trust Equipment are provided for in Clause 21 including the procedure for adding and deleting items of such equipment from that listed in Schedule 13.

The Trusts are responsible throughout the Operational Term for the transfer, movement and/or installation of all items of Trust Equipment or Trust Excluded Equipment, save where this is required to allow Project Co to carry out its maintenance obligations.

13.4.3 Information Management and Technology (IM&T)

The ICT installation process is divided into 2 parts. Project Co will install cabling containment and parts (passive infrastructure) in the new facilities as part of the Works. In the Retained Estate (which is only relevant to UHBT), passive infrastructure will be installed by Affiniti as the UHBT's sub-contractor under a JCT type agreement between UHBT and Affiniti. Once the infrastructure has been installed and the relevant completion tests have been passed, Project Co will provide the ICT Service to UHBT. This service is not being provided to BSMHT, which is making alternative arrangements.

The tests on completion of each aspect (i.e. the Facilities and the Retained Estate) will involve an assessment as to whether the two elements function as a single network. Once the tests have been passed, Project Co will take responsibility for the network as a whole (i.e. within both the Retained Estate and the Facilities). From this time on, the Trusts' sole remedy will be under the payment mechanism.

During the installation of the passive infrastructure in the Retained Estate, Affiniti will be a Trust Party. If they delay their work to the extent that that the Trust's ability to handover the Retained Estate to Project Co is affected, Compensation Event protection will accrue to Project Co. However, it is felt that this risk is capable of management through allowing Affiniti to have early access to carry out their installation.

There will be no separate warranty or indemnity in relation to the functionality of the two separate aspects as a network. This is addressed through:

a) the completion tests (see above);

b) the "adoption" by Project Co of the Retained Estate ICT element (as well as the ICT element in the Facilities);

c) the application of the payment mechanism to the ICT service across the whole network; and

d) the fact that there will be no "carve out" from the payment mechanism in respect of defects of those ICT Works in the Retained Estate Works.

Installation and testing of the ICT Active Infrastructure (active switches, handsets, exchanges, pagers, wireless receivers and transmitters) will commence after Practical Completion of the Facilities and be programmed for ICT Practical Completion (ICT PC is defined as completion of installation and testing except for snags that do not affect the ICT Service) before the commencement of clinical services ("**Start of Operations**") for each Phase. Exact timings for ICT Practical Completion for each Phase will be agreed in the context of the overall commissioning programme.

The element of the unitary charge attributable to ICT shall be separately identified. Payment other than for the ICT Service will not be affected by delayed ICT Practical Completion. The ICT Service is only being provided to UHBT.

The ICT Payment is due to commence, subject to achievement of ICT PC, at Start of Operations for each Phase. (Note that Interim Services include an interim ICT service).

UHBT has agreed an ICT Termination Longstop date in respect of the achievement of ICT Practical Completion of 12 weeks after each Phase ICT Completion Date.

In relation to capital expenditure for an ICT Change in Law, there is a separate cost sharing matrix based on percentages allocated to each Trust but applied to the initial capital value of the ICT Equipment.

In relation to termination of the ICT Service, Project Co has the ability to terminate its obligation to provide the ICT Service if there is an ICT default. Although a “parachute” arrangement has been put in place to mitigate the effects of such a termination, UHBT would need to find an alternative provider under such circumstances with only limited recourse to Project Co for any additional costs of doing so.

In the event of the termination of the ICT Service UHBT will have the ability to recover from Project Co all of the Direct Losses sustained by UHBT in consequence of the termination of the ICT Services. This is subject to a cap equal to three times the annual ICT Service Payment in respect of defective equipment and twice the annual ICT Service Payment for all other such Direct Losses. It is important to note that the Trust could claim for defective equipment installed in the Retained Estate under this provision. In considering the cap, the Trusts have taken into account the circumstances of having to make a claim under the indemnity and have concluded that it is adequate.

A separate Deductions regime will apply in respect of the ICT Service and reflects the intention that there should be no ICT Deduction as a result of a facilities’ Service Failure (and vice versa). UHBT will only be able to make deductions up to a capped amount from the Service Payment in respect of ICT service shortfalls. That cap has been set at three times that part of the Service Payment that will be made in respect of the ICT service.

A single help desk is likely to apply for all services Site wide. This may require Rectification and Response Times to be measured from the time the fault is passed on to the relevant Service Provider (or Trust). Help desk Quality Failures may apply where notification has been inappropriately delayed. A Service Failure reclassification procedure will apply where a Service Failure is attributed to one Service but, on investigation, should be attributed to another.

If the ICT Contractor commits a prohibited act, Project Co can prevent the Project Agreement terminating if it serves a notice on the ICT Contractor terminating the ICT Contract.

13.4.4 Retail Services

Project Co has the right to provide retail services at the Facilities. The Retail Areas will be leased to Project Co on the basis of an "island" lease and sub-let by Project Co to the retail operators. If the Project Agreement is terminated prior to the Expiry Date the Retail Head Lease of the Retail Areas shall cease. If the Project Agreement is terminated in part in relation to UHBT, the Retail Head Lease of the Retail Areas for the QEMC Site shall automatically cease.

The Trusts are not taking on any additional risk in relation to tenants of the retail areas.

13.4.5 Interim Services

Interim Services will be provided, managed and/or procured by Project Co for the Trusts at the QEMC Site and Selly Oak Site. The Interim Services are set out in Schedule 16 to the Project Agreement.

The Trusts are transferring a defined number of staff to Project Co. Project Co will provide the Interim Services using those staff. The pay and non-pay budgets are retained by the Trusts but are made available to Project Co, in their entirety, for the provision of Interim Services. The Interim Services comprise estates management, utilities infrastructure and management

and estates maintenance, grounds and gardens maintenance, third party energy contract management, internal security services to UHBT, a hard FM helpdesk service and an ICT service.

Project Co will deliver the Interim Services in accordance with the Interim Service Level Specifications at Schedule 16. If the performance of the Interim Services falls below agreed parameters the Trusts will retain an ability to deduct sums from Project Co's profit margin, but are not allowed to terminate the Interim Services.

Due to the nature of the commercial arrangements in relation to the provision of Interim Services, the parties have agreed to drafting that will apply where there is a non-compliance with Law (health and safety etc) in the Premises to which the Interim Services are provided. This drafting allows the Trusts to trigger a derogation from compliance with Law by either suspending performance of the Interim Services until the defect is remedied or electing to take the relevant part of the Premises out of the scope of Schedule 16 (for example, in estate that is to be demolished as part of the Works and/or it is not cost effective, following a Making Safe, to carry out all necessary compliance works).

13.4.6 Insurance

In accordance with the requirements of the Standard Form NHS Project Agreement, Project Co is required to effect and maintain a comprehensive programme of required insurance policies. Such policies are detailed within Schedule 21 and are broadly classified as follows:

- Contractors' 'All Risks' - to cover the new buildings and refurbishment work during the Construction phase.
- Property Damage 'All Risks' - to cover the new buildings and refurbished buildings during the Operational phase.
- Third Party Public and Products Liability - to protect all project participants in relation to their legal liability for death/bodily injury to third parties and/or loss or damage to their property during the Construction and Operational phases of the project.
- Delay in Start-Up and Business Interruption - to protect against any accidental loss of revenue/income of the SPV and/or funder.

Only premiums for the above policies have been factored into Project Co's Financial Model.

Project Co has also accepted the provisions of Clause 36 of the Project Agreement in relation to the above insurances. This Clause deals specifically with issues such as:

- Insurances which the SPV is required to effect by any applicable law - e.g. employers' liability and motor third party liability.
- The requirement for all insurances to be arranged on a composite basis.
- Subrogation and Vitiation.
- Evidence of Project Co insurance.
- Uninsurable Risks.
- Risk Management.
- Reinstatement Plan.
- Insurance Cost sharing.

In relation to the Insurance Cost Sharing mechanism, Project Co has accepted an approved mechanism which is contained within Parts 3 and 4 of Schedule 21 with no additional risk/contingency premium being required.

13.4.7 Employment

The provisions in relation to TUPE and Employment Matters set out in Clause 30 of the Project Agreement comply with SF3 and include drafting amendments to provide for provision of the Interim Services.

13.4.8 Land and Property

The Relevant Trust grants a licence to Project Co to exercise the Ancillary Rights and to enter the Sites and Existing Facilities in order to implement the Works, carry out Pre-Completion Commissioning and carry out the Interim Services.

Project Co shall be entitled to take possession, occupy, control access to, erect and maintain certain facilities upon and store certain machinery upon the Works Areas for the periods ascribed to them for that Site.

Access following Construction is in accordance with Standard Form 3 and in addition, from the Interim Services Commencement Date UHBT will grant a licence to Project Co and Project Co Parties to enter upon the Retained Estate Site insofar as the operations relate to the Site.

If the Agreement is terminated prior to the Expiry Date the Licences will cease. If the Agreement is terminated in part prior to the Expiry Date in relation to UHBT, only the Licence given in Clause 14 but excluding the Mental Health and Showell Green Lane Facilities will cease. If the Agreement is terminated in part in relation to BSMHT only the License given in respect of the Mental Health and Showell Green Lane Facilities will cease.

The basis on which the Project was tendered required that the Relevant Trust would procure the Sites and access thereto to enable the Works and Project Operations. A third party claiming a legal right within a Site that would prevent access to Project Co for the Project Operations/Works will amount to a breach of the Project Agreement covenant by the Relevant Trust to provide a licence for the Works/Project Operations in such areas. This would translate to potential Excusing Cause Delay Event and Compensation Event Protection. The Trusts are not aware of any rights of way being claimed in respect of the projects sites (apart from Moseley Hall) and have mitigated their exposure through entering into an access agreement with Birmingham City Council. In addition, UHBT has negotiated an amendment and release of certain restrictive covenants.

There are a number of statutory undertakers with interests in the Sites. These include Severn Trent (who have a substantial aqueduct that runs through the QEMC site), Transco (which has a gas governor on site) and Birmingham City Council. The Project Agreement reflects that the Trust will take responsibility for invasive works carried out by statutory undertakers unless resulting from an act or omission of Project Co. Similarly, the Trusts will take responsibility for delays resulting form failures to obtain consents required from statutory undertakers by Project Co to carry out the Project Operations.

13.4.9 Construction/Commissioning

As mentioned above, the phasing is complex, requiring sophisticated commissioning and practical completion arrangements which are addressed in Schedules 8, 10 and 12 to the Project Agreement.

The above project specific matters have resulted in amendments to Clauses 22 and 23 of the Project Agreement.

13.4.10 Retained Estate

The Trust and Consort have identified a strategy for the Retained Estate which provides for reconfiguration, remedial works and retention of functional assets.

The approach allows the Trust to keep overall maintenance responsibility for some facilities and assets that do not warrant substantial investment, whilst others will fall within the PFI project.

The key feature is that in order to be able to pass service responsibility to Consort the Trust is required to bring Zone 1 assets (Wellcome Building, Oncology, Postgraduate Centre, Morris House, Pharmacy Building) that fall outside Consort's Zone Works to a standard consistent with that of other parts of the New Hospital (subject to derogation). In the case of car parks, roads, footpaths, hard standing external areas and above and below ground services and utilities these are to be handed over in Condition B.

Remaining Zone 2 assets (Nuffield House, Wolfson Building and the Morris Centre) are to be maintained and reconfigured to Trust's instruction only and the standards to be applied will be derogated. Project Co retains no risk in relation to Zone 2 or mothballed areas except in relation to the (limited) service requirements for those areas. There is scope for Nuffield House to be withdrawn from the scope of the Project by way of a variation.

The remainder of the former Queen Elizabeth Hospital is to be mothballed and a basic maintenance regime has been agreed that will prevent significant deterioration and keep the building in a safe and watertight condition.

The Trust retains the risk in the buildings not being in Condition B for a period of two years post surrender of the same. Project Co retains no risk in relation to Zone 2 or mothballed areas except in relation to the (limited) service requirements for those areas.

13.4.11 Co-operation Agreement between the Trusts

The Co-operation Agreement between the two Trusts is designed to ensure that in exercising their respective (and separate) rights under the Project Agreement each Trust has regard for the financial and operational requirements of the other and to regulate the way in which they will co-operate with each other. The Agreement also prevents any inappropriate cross-subsidies.

The Agreement provides for the appointment of a Trust Works Representative by the two Trusts and regulates the way in which they may each instruct the representative.

The drafting provides for the establishment of a Joint Working Party comprising 2 representatives from each Trust and the functions of the Joint Working Party.

The Trusts must discuss the position before either initiates steps which may lead to the replacement of a Service Provider.

Each Trust must liaise with the other in respect of Design Data and before requiring a Variation and must meet additional costs which the other incurs as a result of such a Variation.

Where one Trust has caused an Excusing Cause or Specified Excusing Cause under the Project Agreement, and hence the other Trust is unable to make deductions from its payment to Project Co, it can claim the value of that deduction from the Trust which caused the Excusing Cause (to the extent that the Trust caused the Excusing Cause). Both Trusts understand that this is within their constitutional powers.

Where both Trusts are responsible for but allocation of responsibility for an Excusing Cause or Specified Excusing Cause and/or Compensation Event is not clear or there is no basis for attributing responsibility, UHBT will be responsible for such amounts where the same relates to the QEMC Site and/or the Works and/or Services in relation to the Hospital and BSMHT will be responsible for such amounts where the relevant event relates to the Mental Health Facilities Site and/or Showell Green Lane Site and/or the Works and/or Services in relation to the Mental Health Facilities and/or Showell Green Lane Facilities. Where responsibility is not

capable of being reasonably attributed to each Trust or relates to Common Parts, the Trusts will bear the percentage shares set out in the Co-Operation Agreement.

In relation to Programmed Maintenance, the same cannot be accelerated without the prior written consent of the other Trust (such consent not to be unreasonably withheld or delayed) where such maintenance is reasonably likely to affect the other Trust.

Where an Uninsurable Risk arises in relation to a risk under a public liability policy, the Trusts must liaise to decide whether to terminate the Project Agreement and pay force majeure termination compensation. Where an Uninsurable Risk arises in respect to all other Uninsurable Risks, any reduction in the Service Payments will be shared in accordance with the Apportionment of Benefits, Costs and Liability drafting.

On the occurrence of a relevant Uninsurable PL Risk, the Trusts must pay the injured party an amount equal to the payment that would have been payable in respect of the claim had the relevant insurance continued to be available in the proportions set out in the Apportionment of Benefits, Costs and Liability drafting in the Co-operation Agreement (figures inserted at financial close). On the occurrence of a relevant Uninsurable Risk (which is not an Uninsurable PL Risk) the Trusts must liaise in order to agree whether to pay Project Co an amount equal to the insurance proceeds that would have been payable or to terminate the Project Agreement.

In the case of Project Agreement termination through Trust Default, the defaulting Trust must compensate the non-defaulting Trust for additional costs. Compensation on Partial Termination of the Project Agreement is dealt with so that the non-defaulting Trust (who must compensate Project Co under the Project Agreement) is reimbursed for an amount equivalent to the cost of implementing the Variation Enquiry (deemed served) and the non-defaulting Trust's costs and expenses incurred as a result of such Variation Enquiry.

Any decisions to terminate the Project Agreement must be discussed between the Trusts and if they disagree with each other the matter must be referred to the Department of Health. In relation to termination due to Force Majeure, the Co-Operation Agreement sets out which issues should be taken into account by the Trusts in making the decision to terminate.

The Trusts must also discuss any proposed termination due to a Prohibited Act being committed.

Compensation payable from one Trust to the other excludes compensation for consequential loss.

Where a liability has arisen or a benefit accrued under the Project Agreement as against or to the benefit of the Trusts, unless otherwise set out in the Co-Operation Agreement, the Trusts will agree responsibility for such liability or the sharing of such benefit on a fair and reasonable basis, failing which the same will be resolved through the Dispute Resolution Procedure. If the matter is unable to be resolved through such procedure, the Trusts shall share the liability or benefit in the proportions set out in the Apportionment of Benefits, Costs and Liability drafting.

There is a Dispute Resolution Procedure set out in the Co-Operation Agreement which involves referral to the Chief Executives of the Trusts or, if this fails, mediation.

13.4.12 Variations

Anticipated Variations

Moseley Hall (BSMHT), Nuffield House (UHBT) and the Hard Shelled Accommodation (UHBT) have been incorporated into the Project Agreement as "Anticipated Variations". Under the provisions set out in Schedule 44, each Trust has the right to require Project Co to implement their respective Anticipated Variation as long as the variation is introduced during a

specified period. The Moseley Hall Anticipated variation involves the introduction of the Moseley Hall into the Project. The Nuffield House Variation allows the removal of Nuffield House from it. The Hard Shelled Accommodation Variation allows UHBT to require the Hard Shelled Accommodation to be fully fitted out.

If Moseley Hall is put into the Project, BSMHT will retain the risk of title issues affecting either the construction of Moseley Hall or its subsequent operation.

The Moseley Hall Anticipated Variation will be funded by Project Co using a separate facility provided by EIB. The availability of this facility is subject to a number of conditions precedent.

A price has been agreed for each Anticipated Variation as long as they are introduced by certain deadlines that are set out in Schedule 44. However, it is important to note that, in relation to Moseley Hall, BSMHT will take the risk in the effect of inflation on the capital cost and also on the amount payable for the services to be provided at Moseley Hall. BSMHT will also take the interest rate risk.

The base capital cost is subject to amendment by reference to the adjustment factors set out at Appendix 10. All but paras 5 and 6 will apply where the Moseley Hall variation is triggered prior to 30 April 2007. After this time (and before 30 November 2007), all of these factors will apply.

The Anticipated Variations are changes introduced by the Trusts. Therefore, if the Trusts decide not to trigger them, Moseley Hall will not form part of the Project, Nuffield House will remain within it and the Hard Shelled Accommodation will remain incomplete.

In addition, in relation to Moseley Hall, if requested, Project Co will assist BSMHT in discharging the conditions to the planning permission. The expenditure to be incurred by Project Co can be monitored by BSMHT and is capped.

In order to trigger the Anticipated Variation, BSMHT must satisfy several conditions precedent. These are to demonstrate to Project Co that:

- satisfactory Planning permission has been obtained (and that the three month Judicial Review period has expired);
- all conditions to the Planning permission have been satisfied (and that the three month Judicial Review period has expired in relation to all of them);
- satisfactory service media rights exist over the site;
- BSMHT has exchanged contracts with South Birmingham PCT to acquire Moseley Hall; and
- BSMHT has a valid licence to carry out the Moseley Hall Works and the Moseley Hall Services in relation to areas outside the Moseley Hall site.

BSMHT will not be able to trigger the Moseley Hall Variation if it cannot satisfy all of these conditions precedent.

Project Co will be able to resist carrying out the Moseley Hall Variation on the grounds referred to at paragraph 3.2. These are:

- that implementation of the Moseley Hall Variation would materially and adversely affect the health and safety of any person; or
- that implementation of the Moseley Hall Variation would:
  - infringe any Law; or
  - cause any existing Consent (which is not reasonably likely, on a balance of probabilities, to be capable of modification) to be revoked; or

- require a new Consent which will not (using all reasonable endeavours) be obtainable;

- that BSMHT does not have the legal power or capacity to require the Moseley Hall Variation to be implemented or to do anything envisaged in respect of, or in connection with, the Moseley Hall Variation
- that Project Co would have to raised funds in excess of the funds identified as being available for the variation; or
- any consents of the funders under the Funding Agreements are not obtained.

If the Moseley Hall Variation is not triggered, then the EIB facility will not be utilised for this purpose. However, it should be capable of being used to assist in the funding of an alternative to Moseley Hall.

The Contractor has assumed that it would have access to working capital of £3,655,285 of the funds identified in the model to fund Moseley Hall. As a result, if Moseley Hall does not happen, the Contractor will have access to these funds until the time that Moseley Hall was originally anticipated to have been completed. Once this date has occurred, it will be repaid to EIB unless BSMHT requires it to be retained by Project Co and put towards the costs of any other variation. However, costs incurred by Project Co in discharging reserved planning matters will be netted off this amount.

BSMHT has only a limited period of time to trigger the Moseley Hall Variation under Schedule 44. It must trigger the variation prior to 30 November 2007. If it does not, it will have to seek to introduce Moseley Hall under Schedule 22.

The capital cost of Nuffield House is to be funded by strategic capital. As a result, UHBT will need authorisation from the Department of Health in order to make the payment.

In relation to the Hard Shelled Accommodation, there is drafting at Clause 17.17 of the Project Agreement which makes it clear that, until the variation is triggered (and UHBT requires that the Hard Shelled Accommodation is fitted out), Project Co will be required only to deliver the accommodation to a "hard shelled state" and will not be required to maintain it or equip it. There are two options as to which generic wards will be hard shelled and a final choice must be made by 31 July 2007.

The fitting out of the Hard Shelled Accommodation will be funded from additional funds being made available by EIB. The availability of these funds is subject to certain conditions precedent in the EIB Funding Agreement. This will include legal and technical due diligence.

Funding for both Moseley Hall and the fit-out of the Hard Shelled Accommodation will be provided out of the same EIB facility.

There is potentially a mis-match between the timing of the Hard Shelled Accommodation Variation Notice and the carrying out by EIB of its due diligence (and confirming that the funding is available). This is more of an issue if UHBT serves its notice close to 31 December 2007 and Project Co needs to start work immediately in order to preserve the Project programme. Under such circumstances UHBT will make payments on account to Project Co with effect from 31 January 2008 against an agreed cashflow. The position will be reviewed at the end of April 2008, at which time either the EIB funds should be available, or the variation will be withdrawn.

EIB has, in the terms of its funding agreement in relation to the variations, the right to take up to 4 months to provide the funding and confirm the applicable interest rate. It has been agreed that, if EIB exercises this right, the absence of funding will be bridged by Project Co. The costs of this funding will be reimbursed to Project Co by UHBT.

13.5 Planning Issues

A summary of the main planning issues which are the responsibilities of the Trusts are given at **Appendix 13A**.

13.6 Conclusion

The Project Agreement has been developed in conjunction with the PFU.

The substance of the commercial terms in the published NHS Standard Form Project Agreement has been followed throughout the negotiations. Any customisation of the Project Agreement in relation to the BNHP project has been made and included to reflect project specific issues.

FINANCIAL ASSESSMENT OF THE PFI SOLUTION

14.1 Overview

The following summary provides the key points of this section:

- Term of the agreement with Consort - 40 years from Financial Close with the operational phase being between 35 and 38 years (see below);
- The scheme has a first Service Payment £43.425m and a NPV including Interim Service Payments (at 6% real) of £442.447m at 31 March 2004 prices;
- The Service Payment will vary during the operating period due to the impact of inflation, to be updated on 1st April each year from April 2005 using the Retail Prices Index (all items);
- Capital receipts and 3rd party income from commercial retail developments and car parking will reduce the Service Payment for the Trusts;
- Consort has adopted Composite Trader tax structure in addition to Finance Debtor accounting;
- A variety of methods and sources of funding are being used with 92% coming from debt and 8% from equity;
- Bond as opposed to bank funding has been selected as the best value for money funding route;
- Consort have reserve account requirements placed on them to retain sufficient cash in the SPV to meet lifecycle requirements and lenders' covenants;
- The project company's internal rate of return will be 14.57% post tax (nominal) and the debt cover ratio will be 1.22 on average.

14.2 Background

The information in this section is based on the financial close model entitled *060607_BNHPJ_(Financial Close - FINAL) - TRUST_R.xls*.

The model is based on the actual Financial Close date of 14th June 2006 and reflects the project before the pre-agreed variation introducing the Moseley Hall site has occurred. The funding requirement relating to Moseley Hall will be met by means of a committed variation bond, which will not be drawn down until the variation is exercised.

The financial model has been produced by the Royal Bank of Scotland with a view to providing financial projections for the shareholders of Consort. It has been built using Microsoft Excel 2002 and generally follows best modelling practice.

The evaluation process up to financial close has incorporated several detailed reviews of both this and previous versions of the financial model. Although the financial model has been the subject of detailed analysis by the Trusts and PricewaterhouseCoopers LLP (PwC), it has not been audited by the Trusts or PwC. Under these circumstances neither the Trusts nor PwC takes responsibility for any errors contained therein.

14.3 Terms of the Agreement

The total concession will run for 40 years from Financial Close. Whilst the construction phase is expected to last just over 5 years in total, elements of the facility begin to be commissioned from year two onwards. Consequently, the operational phase of the project lasts between 35 (for the final elements) and 38 (for the initial elements) years.

14.4 Service Payment

The Service Payment payable by the Trusts will be as follows:

Table 14-1: Service Payment Summary			
Service Payment - £000s 2004-05 Price Base	**UHBFT**	**BSMHT**	**Total**
First full year Service Payment	38,455	4,970	43,425
Net Present Value (NPV) of Service Payments	383,101	57,506	440,607

The 2004-05 price base figures reflect the stream of Service Payments contained within the Consort financial model. All of the analysis that follows in this section is based upon the 2004-05 price base figures.

The NPV is calculated at a real (i.e. excluding inflation) discount rate of 6% being applied to the base date of 1 April 2004[1].

The full Service Payment for each Trust will be subject to Failure Event and Quality Event deductions for unavailability of the facilities or poor levels of service as set out in the Project Agreement and its accompanying schedules including, inter alia, the Payment Mechanism.

The phasing of the Service Payment for each of the Trusts is shown in the tables below:

Table 14-2: UHBFT Service Payment Phasing	
Date	**Percentage of Service Payment Payable from Date**
18th April 2010	17.69%
15th June 2010	59.30%
16th November 2010	81.15%
28th June 2011	92.34%
10th October 2011	100.00%

Table 14-3: BSMHT Service Payment Phasing	
Date	**Percentage of Service Payment Payable from Date**
18th June 2008	100.00%

14.5 Inflation

The Service Payment will vary during the operating period due to the impact of inflation. The indexation will be related to the All Items Retail Price Index ("All Items RPI").

The full Service Payment will be subject to inflation on the 1st of April 2005 and every 1st April thereafter to the end of the concession. The financial model assumes that that inflation will be 2.5% per annum.

[1] Based on cash flows taken from the Consort financial model, discounted on a semi-annual basis.

Post Financial Close, the inflation rate risk will pass from the Trusts to Consort. Consort's decision to utilise index linked funding negates the need to purchase an inflation hedging RPI swap instrument.

14.6 Underlying Costs

Consort's proposals address the Trusts' scope requirements in terms of design-build and facilities management as set out in the Estates Volume, and comprise:

- ***Capital costs***: which include all the buildings and bid development costs, the initial Group 1 equipment and IM&T infrastructure;
- ***Lifecycle Costs***: which include ongoing maintenance and replacement to the facilities, IM&T infrastructure and Group 1 equipment;
- ***Facilities Management and Operating Costs***: which include estates services, grounds and gardens maintenance, security, car parking and traffic management, a helpdesk service, SPV operating costs; and
- ***Other costs***: which include finance, working capital and taxation costs.

The following Table 14-4 shows the NPV of each of the cost lines over the life of the concession.

Table 14-4: Individual Components of NPV Analysis

NPV Analysis	£'000
Total NPV of Service Payments	**440,607**
Represented by:	
Capital and development costs	395,960
Life cycle expenditure	35,197
Direct costs and operating costs	151,300
Total Underlying Costs	**582,457**
Financing	(130,830)
Taxation	15,260
Working capital, cash & other movements	(7,497)
Total financing costs	**(123,067)**
NPV Total before Capital Receipts & Third Party Revenues	**459,390**
Capital receipts	0[2]
Third party revenues	(18,783)
Total NPV at 6% (real)	**440,607**

14.7 Capital Receipts and Third Party Revenues

As a way to reduce the costs of the health facility to the Trusts, third party revenue from commercial retail developments and car parking is used to reduce the Service Payment each year.

[2] A capital contribution of £7.321m (nominal) is payable by the University of Birmingham. This is not reflected here as the capex is shown net of this amount.

The revenues from commercial retail developments and a car parking service are fixed and underwritten by Consort, who takes the full risk and reward in achieving these amounts.

A capital contribution of £7.321m is to be received by the SPV in April 2010 in respect of the education facilities required by the University of Birmingham. The University will also pay a proportion of the UHBFT Service Payment which relates to the hard FM and lifecycle costs associated with the education facilities.

14.8 Taxation

Consort has adopted Composite Trader tax structure in addition to Finance Debtor accounting. Both of these policies result in a significant reduction in tax payable. **Appendix 14A** gives confirmation from the Inland Revenue (a Code of Practice 10 clearance) as to the initial acceptability of this approach for the project.

The Service Payment is stated exclusive of VAT. VAT at the standard rate of 17.5% will be added to the Service Payment when invoiced. The VAT added to the Service Payment will be recoverable and therefore the addition of VAT has no net impact on the Trusts. **Appendix 14B** indicates the HMCE view on the VAT issues related to this scheme.

14.9 Method and Sources of Funding

The total funding as at the end of construction required in the financial model is £699.7 million. The funding is made up of a combination of senior debt (combination of an index-linked bond and an index-linked loan provided by the European Investment Bank (EIB) funding), subordinated debt and ordinary share capital. This funding structure is summarised in Table 14-5 below:

Table 14-5: Proposed Financing Structure

Proposed Financing Structure	£'000	%
Source:		
Equity	50	0.01
Subordinated Debt	56,430	8.30
Index Linked Bond	375,463	55.26
EIB Index Linked Loan	247,546	36.43
Total	**679,489**	**100**
Debt/Equity		**92:8**

The finance plan is typical for a Public Private Partnership (PPP) transaction of this nature, being 92:8 debt to equity. The terms that have been offered are largely consistent with the current market and the structures proposed are common in UK PPP transactions.

Table14-6 provides the corresponding names of the providers of each type of finance.

Table 14-6: Finance - Providers

Instrument	Provider
Equity	
Ordinary Share Capital	Balfour Beatty Infrastructure Investments Limited HSBC Infrastructure Fund Royal Bank Project Investments Limited
Subordinated Debt	Balfour Beatty Infrastructure Investments Limited HSBC Infrastructure Fund Royal Bank Project Investments Limited
Senior Debt	
Index Linked Bond	Royal Bank of Scotland (RBS) wrapped by FGIC
Index Linked Loan	European Investment Bank ("EIB") wrapped by FGIC

14.10 Shareholder Funding

The project sponsors are providing the ordinary share capital and subordinated debt in the following proportions:

- Balfour Beatty Infrastructure Investments Limited – 40%
- HSBC Infrastructure Fund – 30%
- Royal Bank Project Investments Limited - 30%

The ordinary share capital is to be subscribed in full at Financial Close. The subordinated debt is drawn following full utilisation of the senior debt and facilities. All terms and conditions are standard for the ordinary share capital and loan stock. The coupon on the loan stock of 8% over LIBOR[3] is in line with market norms.

A number of other Balfour Beatty Plc wholly owned companies are providing services, under sub contract, to the SPV.

Haden Young Ltd and Balfour Beatty Construction Ltd (both part of Balfour Beatty Plc) have formed a joint venture to deliver the totality of the mechanical and engineering and construction services to the SPV. The construction joint venture will be supported by a performance guarantee from their Balfour Beatty Plc.

In addition, Haden Building Management Ltd will provide the hard Facilities Management and lifecycle building maintenance and replacement services for the duration of the Project Agreement. The services provided (under sub contract by) Haden Building Management Ltd will be supported by a performance guarantee from Balfour Beatty Plc.

In both cases the performance guarantee will obligate Balfour Beatty Plc to step in where service obligations are not being met and rectify. If this is not possible then Balfour Beatty Plc will have to

[3] London Inter-Bank Offer Rate

meet the financial loss to the SPV resulting from the failure of the construction joint venture or the facilities management/life cycle services provider.

This structure provides the commercial and contractual leverage to the SPV to enforce its major service providers' obligations.

14.11 Senior Debt Funding

Consort has utilised index-linked debt as the principal funding instrument, with the funds coming from two sources – the European Investment Bank (EIB) providing a bank loan and Royal Bank of Scotland ("RBS") providing bond finance. Both facilities will be guaranteed by FGIC.

The relative costs of fixed bond finance and index-linked bond finance were monitored throughout the preferred bidder negotiations stage. Consort provided a further iteration of the financial model using the same cost base but replacing index-linked with fixed bond financing (based on a fixed bond spread of 65 bps). This resulted in an increase in the Service Payment of 1.02% and the NPV of the Service Payment of 1.53%, thereby demonstrating that index-linked finance continued to represent the best value for money financing option for the Trusts.

14.11.1 RBS Bond

RBS have arranged and underwritten a public index-linked bond issue, drawn in a single tranche at Financial Close and to be repaid over 37.5 years. A tenor of 37.5 years on a 40 years concession is very much in line with current market trends.

The pricing of the bond facility was linked to the underlying rate of the UK Treasury gilt whose maturity most closely matches the average life of the bond. At financial close the underlying gilt rate was 1.458% and the spread achieved was 0.514%, the lowest achieved to date for a hospital PFI transaction using index-linked bond finance. Added to the underlying gilt rate is the margin (or spread) requirement of the bond investors.

14.11.2 EIB Debt Facility

The EIB has put in place an index-linked loan facility of £225 million, which was fully drawn at Financial Close, The loan has a maturity of thirty-three years, which is the maximum tenor that EIB currently offer.

The EIB is an instrument of the European Union and as such is able to offer very competitive lending terms to those projects which qualify for EIB support. The pricing benefit of the EIB loan is to be found in the lower margin they charge over the underlying gilt rate as compared to the public bond. The total rate offered by the EIB was 1.834% which compares favourable with the total rate of 1.972% for the public index-linked bond.

14.11.3 FGIC Guarantee

Both the EIB loan and the RBS bond benefit from a FGIC guarantee or "wrap". FGIC is a monoline insurance company which guarantees to the bondholders and to EIB that all interest and principal repayments due under the terms of the bond issue and the loan facility, will be paid in full at the expected dates. In other words, the bondholders and EIB are no longer exposed to the risk of the project cash flows being insufficient to meet these repayments. FGIC has taken on this risk in return for a premium or fee.

To receive such credit enhancement from FGIC, the project was required to achieve, as a minimum, an investment grade rating of BBB- from both Standard & Poors and Moodys (rating

agencies). FGIC's premium of 22 basis points in respect of both the EIB loan and public bond issue compares favourably with current market rates for investment grade paper. One quarter of this premium becomes payable at Financial Close with the remainder paid over the life of the project.

As a consequence of FGIC's guarantee, the bond effectively enjoys AAA credit rating and this attracted much finer pricing (spread) from the bond investors. Without the MBIA "wrap" the margin (or spread) on the bond would have been significantly higher as it would have been rated as a "junk" issue where spreads can be as high as 200 basis points.

14.12 Reasoning for the Choice of Bond Funding

Consort considered both bond and bank debt funding options with the bond option chosen as the most economically advantageous solution.

The relative costs of fixed bond finance and index-linked bond finance were monitored throughout the preferred bidder negotiations stage. Consort provided a further iteration of the financial model using the same cost base but replacing index-linked with fixed bond financing (based on a fixed bond spread of 65 bps). This resulted in an increase in the Service Payment of 1.02% and the NPV of the Service Payment of 1.53%. Assuming a more aggressive spread of 55 bps for the fixed bond resulted in a Service Payment 0.6% higher than that achieved under the index-linked bond solution, thereby demonstrating that index-linked finance continued to offer the best value for money for the Trusts.

14.13 Reserve Account Requirements

Consort is required by its funders to set up a Debt Service Reserve Account to maintain a cash reserve of the following 6 months interest and principal due on the senior debt facilities. This reserve is to be fully funded by construction completion.

Consort must also establish a Change of Law Reserve Account and they have assumed a maximum change of law liability of £17.060m. The funders require that this potential liability be catered for by way of a reserve account with 60% of the potential liability to be reserved 6 months prior to the end of construction and the balance to be in place by September 2028 by way of equal semi-annual instalments from the end of construction.

Consort is also required to establish a Maintenance Reserve Account ("MRA") to ensure they have cash available for the projected peaks and troughs in life-cycle replacement. The account is to be fully funded by construction completion, on a look forward basis, to ensure a balance in any period equal to:

- 100% of maintenance costs occurring in the following 12 months;
- 67% of maintenance costs occurring in months 13-24; and
- 33% of maintenance costs occurring in months 25-36.

14.14 Interest Rate Risk, Inflation Risk and Hedging Strategy

The cost or benefit of any interest rate changes prior to Financial Close lay with the Trusts, with the final Service Payment determined at Financial Close being based upon the rates actually achieved that day. Interest rate risks will lie with Consort post close.

The key rates for the bond and the EIB facility are the underlying gilt yield, the investor spread requirement over and above the yield and the deposit rate of interest on the bond proceeds

(known as the Guaranteed Investment Contract, "GIC" rate. The Service Payment figures are based upon the interest rates and bond spreads obtained in the open market at Financial Close.

In order to validate the rates secured at Financial Close, the Trusts' financial advisers performed a full and transparent benchmarking process for the underlying rates, including the running of a competition between potential GIC providers.

Post Financial Close the interest rate and inflation rate risk lies with Consort. However, Consort do not require separate hedging instruments for these risks during the operational phase of the project, as their funding solution incorporates an index linked bond and an index-linked loan which sets the underlying rate of interest to be paid from the outset for the duration of the bond life with the variable element being inextricably linked to RPI as is the revenue stream. Hence there is an in-built interest and inflation hedge within the debt instrument itself.

However, Consort do require a separate instrument to close out these risks during the construction phase. Drawing both the bond and the EIB loan in full at Financial Close results in substantial interest earnings during the construction phase, which contributes towards the financing of the project. These interest earnings are generated by investing the bond and EIB facility proceeds in a GIC.

As well as maximising the interest earned on the proceeds, the GIC also covers against potential mismatches between interest earned and the interest due on the index linked debt instruments.

14.15 Internal Rate of Return and Cover Ratios

The inherent strength and stability of Consort is evidenced by the rate of return generated on the equity funds and the cash cover ratios in respect of the debt facilities. The blended real equity Internal Rate of Return ("IRR") calculation for Consort of [redacted]% post tax is within current market parameters for a project of this nature and as such represents an acceptable return on investor funds.

The weighted average cost of capital (WACC) for the project is 2.99% (real post-tax). This reflects the returns for each tranche of funding and is proportionate to their overall contribution to the total project-funding requirement. The WACC of 2.99% (real post-tax) is consistent with the current market norms for projects of this size and complexity.

The cover ratio calculations indicate a minimum / average ADSCR of 1.20 / 1.22 respectively, which are the levels required to meet the requirements of the bond rating agencies.

Table 14-7: Returns

	Nominal	Real
Pre-tax Project IRR	[redacted]	[redacted]
Post-tax Project IRR	[redacted]	[redacted]
Equity IRR	[redacted]	[redacted]
Sub-debt Return	[redacted]	[redacted]
Blended Equity IRR	[redacted]	[redacted]

PwC have expressed their opinion that the funding solution described in this chapter is value for money. A copy of this opinion is annexed at **Appendix 14C**.

ACCOUNTING TREATMENT

15.1 Introduction

PricewaterhouseCoopers (PwC) are acting as financial advisors to the Project. In particular they are advising both Trusts on the likely balance sheet treatment of the scheme but have also at various points given advice on other areas such as the correct treatment of land and buildings.

15.2 Accounting for Land and Buildings

The accounting treatment assumed within the financial and economic analyses for all of the Trusts' land and buildings follows the guidance in Land and Buildings in PFI Deals (Version 2) issued in January 2003 and updated June 2003.

15.3 Land

The Trusts are currently completing a complex Land Assembly program details of which are supplied in **Appendix 15A**.

The leasehold ownership of the QEH site will remain with UHBFT in its entirety, and the value of the land will remain on the Trusts balance sheet based on existing current use values.

The Selly Oak Hospital site will be sold on the open market at project completion the estimated proceeds from sale net of demolition costs have been reflected in UHBFT's financial projections. The Trust has not had a recent OMV valuation and so for this FBC a value equivalent to the NBV has been assumed to be received by the Trust and from these proceeds the Trust will make a repayment of PDC of £12m to reimburse the Strategic Capital Programme at the STHA as previously agreed. The Profit on Sale of the Land has been assumed to credit the I&E reserve.

The Showell Green Lane is currently in the ownership of BSMHT and the Moseley Hall site will be transferred from South Birmingham PCT prior to the exercise of the Moseley Hall variation.

15.4 Buildings

Building Assumptions on that part of the current estate which will not have continuing use are as follows:

- All of the existing buildings on the SOH site will be demolished once the new facilities have been commissioned. Demolition is the responsibility of the Trust and an estimate of the cost is included in both PSC and PFI solutions.
- The majority of the QEH will be "mothballed". The cost of this mothballing is within the PFI UP.
- The QEPH will be demolished. Demolition is the responsibility of Consort in the PFI solution.

The Mental HealthTrust is assuming that accelerated depreciation from 2005/6 (financial close assumed as August 2005) will be fully funded by the NHS Bank. Current guidance is that UHBFT as a foundation trust will not be centrally funded but that the deficit created by accelerated depreciation will be "covered centrally" and this treatment is reflected in this version of the FBC.

Some of UHBFTs current estate at the QEH site (the relatively new buildings designated zone 1) will be retained as part of the PFI scheme and will be subject to the same risk transfer

regimes as the new build. Under FRS5 assessment will transfer the risk and rewards of ownership to the PFI provider.

The accounting treatment requires the creation of a deferred asset (i.e. a benefit realised in future periods) at the point that the Trust transfers existing buildings to the PFI partner.

The deferred asset is written off through the income and expenditure account over the life of the concession. The value of the deferred asset is included in the net relevant assets for the calculation of capital cost absorption duty. The retained buildings will be maintained at condition B throughout the concession period.

A further part of the current estate at QEH (zone 2) will be retained in use and maintained by Consort but the risks and rewards will not pass to the PFI provider. This part of the estate will remain on balance sheet and the refurbishment costs which are included in the PFI will also be capitalised.

The zone 2 estate is old and in poor condition and the Trust believes that the costs of the refurbishment may bring the value to an amount above the existing use value and will therefore result in an impairment following the completion of the refurbishment. The valuation of the refurbished asset will need to be assessed by the DV but has been excluded for the purposes of this FBC as the DV valuation has not yet been carried out.

The costs of amortising, and earning a 3.5% return on, the deferred assets created as a result of these transactions have been fully taken into account in assessing the affordability of the project.

15.5 Equipment

The PFI scheme excludes major medical equipment. The Trusts intend to equip the buildings themselves through a traditional purchase route and the accounting treatment reflects this. The major equipment purchases are within UHBFT and an assumption has been made that for items above £5000 only assets which are within life will transfer to the new hospital. For assets under £5000 a transfer rate of 85% is assumed.

15.6 Payment for Services

The scheme is basically a hard FM only scheme although for UHBFT there is a small Voice and Data Managed Service contract which is separable from the main contract. It is anticipated that this will be off balance sheet because of its nature.

15.7 Other Accounting Matters – Residual Interests

At the end of the concession period all buildings included within the PFI scheme will pass to the Trust at nil consideration. These buildings will have a remaining useful economic life. This residual useful economic life constitutes an asset, which the Trust has paid for during the concession period. In accordance with the guidance set out in *Land and Buildings in PFI Deals (Version 2)* and *Treasury Technical Note 1* the residual value (RV) is built up over the concession period on an annuity basis in order to ensure a proper allocation of payments made between the costs of services under the contract. The DV has estimated the residual value of the assets at the end of the primary concession period and the Trusts have used these estimates in their modelling. The estimates are as follows:

Table 15-1 : NHS Asset Valuation Summary

NHS ASSET VALUATION: ASSET SUMMARY SCHEDULE

VALUATION DATE: 1 APRIL 2005

BIRMINGHAM NEW HOSPITALS PROJECT Residual Valuation PFI

Property Name	Total Buildings Value £	Total External Works Value £	Total Buildings & External Works Value £	Total Land Value £	Total Value £
QUEEN ELIZABETH HOSPITAL - MENTAL HEALTH	11,559,283	0	11,559,283	12,750,000	24,309,283
MOSELEY HALL HOSPITAL	4,849,198	242,460	5,091,658	1,600,000	6,691,658
SHOWELL GREEN LANE	3,828,794	382,879	4,211,673	1,600,000	5,811,673
MENTAL HEALTH SUB TOTAL	**20,237,275**	**625,339**	**20,862,614**	**15,950,000**	**36,812,614**
QUEEN ELIZABETH HOSPITAL - ACUTE	172,604,677	20,937,050	193,541,727	47,250,018	240,791,745
GRAND TOTAL	**192,841,952**	**21,562,389**	**214,404,341**	**63,200,018**	**277,604,359**

The RV (excluding land) is built up on the Trusts balance sheets on a 3.5% annuity basis over the life of the concession period as required by the Land and Buildings Guidance 2003. The value is included in net relevant assets and is subject to the capital cost absorption duty. A copy of the DV report is included at **Appendix 15B**.

15.8 Accounting Treatment

PwC have produced a report for each Trust on the proposed accounting treatment of the scheme for that trust. The reports are included as appendices to this FBC as follows:

- Appendix 15C Provisional Judgement UHB ICT element 17 March 2005
- Appendix 15D UHB Provisional Judgement 17 March 2005
- Appendix 15E UHB Quantitative Indicator 17 March 2005
- Appendix 15F Final Judgement UHB ICT Element 13 December 2005
- Appendix 15G UHB Final Judgement 7 June 2006
- Appendix 15H BSMHT Provisional Judgement 17 March 2005
- Appendix 15J BSMHT Quantitative indicator 17 March 2005
- Appendix 15K BSMHT Final Judgement 18 May 2006

After due consideration and after taking appropriate advice from the Trusts' financial advisors the Directors of Finance of the Trusts have concluded that the hospital does not constitute a capital asset during the concession period. The majority of the risks and rewards of property ownership, including lifecycle responsibilities have been transferred to Project Co.

Letters to this effect are included at **Appendix 15L**.

The external auditors of each Trust have considered the opinion of the Director of Finance of that Trust and they concur with the proposed treatment.

Letters to this effect are included at **Appendix 15M** (provisional) and **Appendix 15N** (final) .

PROJECT MANAGEMENT APPROACH

16.1 Summary

- As the Trusts move beyond Financial Close – marking the end of the Procurement Phase, clear roles and responsibilities have been assigned to both the Trusts and Consort to ensure robust management of the phases ahead.
- In managing the next phase of the development, the Trusts will take on board the recommendations of external reviews (including OGC Gateway reviews) which have currently assigned the project an Amber status.
- Key project management deliverables have been identified in six stages covering the period post financial close to the opening of the new acute facilities in 2010.
- A new project management structure will be implemented, ensuring that all stakeholders are actively and appropriately engaged and accountable. The new project management structure will be headed up by the New Hospitals Project Board, answerable to the Boards of the two Trusts.
- At financial close Consort Healthcare (Birmingham) Limited will be formally established as the company that contracts with the Trusts to deliver the project. The new company will operate to approved project management methodologies consistent with ISO 9001:2000.
- During the construction phases, there will be ongoing dialogue with neighbouring health organisations to ensure seamless implementation of locally agreed health strategies and the national agenda. The public will continue to be informed of progress on the developments through a variety of communication channels.
- In recognition of problems in previous phases, the Trusts will seek to ensure the retention of corporate memory in both the Trusts and Consort management teams.

16.2 Managing the Challenges Ahead

The Trusts recognise that significant challenges lie ahead in bringing this complex project to a successful and fully commissioned completion. These challenges, whether organisational, transitional or financial will require the same form of proactive management and leadership that has brought the project through the planning and procurement phases.

The Trusts' role in the construction and commissioning phases post Financial Close (FC) is summarised as consisting of the following elements:

- Production of project development and control documentation,
- Site Construction interface and construction quality monitoring.
- Audit, monitoring and evaluation of specified output quality.
- Equipment procurement, Operational commissioning and decanting.
- HR change management and implementation plan

At FC the Trusts' led procurement phase will end and the private sector partner (PSP) led construction phase will commence. The responsibilities of project partners and the focus of the Trusts project team will change as a result, and to minimise risks to the Trusts' these changes need to be considered, quantified and resourced. The Trusts' approach to these next phases will be the adaptation of traditional project management arrangements that take into account the experience of other Trusts that have reached the operational stage of a PFI. This emphasises the need for:

- Robust project management arrangements to continue through the construction phase, with reporting at Board of Director level by the managers of the project and their private sector partners.

- The contract management and change order management, both during and after construction, must be properly resourced.
- A change in culture that provides for the contract to be managed in a sense of partnering rather than the more adversarial, contractually driven relationships of the past.

Although the skill base and priority of work streams will change through the "construction phase" and ultimately the "bringing into use phase", the Trust will need to continue managing all aspects of the project to obviate, or at least minimise, the risks to the Trusts' core business. In terms of project management, the risks associated with time and budget overrun are, in theory, transferred to the PSPs. In practice, the Trusts will need to ensure that this transfer of risks does not, by default, siphon back to the Trusts. In addition, "quality adjustments" will be an essential part of the PSPs' ability to balance off these risks but these could be critical to the Trusts' performance over the coming years. The Trusts, therefore, need to be in a primary position to apply rapid and simultaneous influence over the key decisions.

Consolidation of risk transfer and quality assurance will be a fundamental element of the Trusts' responsibilities, as will the responsibility of bringing the facilities to operational maturity. Additionally, they will carry the risks associated with the preparation and implementation of the managed equipment and (soft) FM services that will not been transferred to the PSPs. To discharge these responsibilities it will be necessary to continue with a Project Team re-structured to take account of the current prevailing issues and risks.

The structure of the project team that has completed the planning and procurement phases has worked well and possessed sufficient flexibility to deal with the changes that the project has experienced over the past 4 years. It is intended to continue this arrangement but structured around the change in work streams associated with the Trusts' responsibilities beyond Financial Close.

16.3 Gateway and other External Reviews

The work of the project team during the planning and procurement phases leading up to this Final Business Case has been set against key delivery targets that have been continuously reviewed by internal and external Auditors with regard to process compliance, corporate governance and risk assessment. A summary of the key reviews and supporting documentation is provided in the following table:

Table 16-1: Gateway and External Reviews

Review	Date	RPA Status	Appendix
OGC Gateway Review Stage 2A	Oct 2003	Amber	16A
- Resulting Report on Action Plan	Apr 2004		16B
NHS Estates Review	Apr 2004		16C
Commission for the Built Environment	Jul 2004		16D
OGC Gateway Review Stage 2B	Nov 2004		16E
- Resulting Structure Report	Jan 2005		16F
OGC Gateway Review Stage 3	April 2005	Amber	16G
- Resulting Action Plan	July 2005		16H

Gateway Action Plans were developed by the Trusts following each review and actions were regularly chased through to completion. In addition, in order to capture the experience from other PFI procurements, people who were actively involved in the NBMHT PFI have been involved throughout the Project – both from a clinical and non-clinical perspective. The Trusts have developed an action plan following the Gateway 3 review and this will be implemented as a priority following the completion of the FBC.

16.4 Project Deliverables

The key deliverables by the project team during the post FC phase of the project are identified in **Table 16-2** together with the target milestone dates.

Table 16-2: Summary of Key Deliverables		
Stage	**Key Deliverables**	**Milestone Dates**
Stage 1	Complete Advance Works and Enabling Works	Jun 2006
Stage 2	Transfer of Mental Health Hard FM staff. (3 months prior to hand over of Facility) Complete and commission construction of Mental Health facilities. Start Project evaluation & baseline measurements Mental Health.	 Mar 2007 Jun 2008
Stage 3	Transfer of Acute services Hard FM staff. (6 months prior to hand over of Facility). Complete and commission Acute facilities Phase 1 and commence Project evaluation & baseline measurements Acute Services.	 Aug 2009 Jun 2010
Stage 4	Complete and commission construction of Acute Facilities Phase 2 and commence evaluation and baseline measurements.	Nov 2010
Stage 5	Complete and commission construction of Acute Facilities Phase 3 and commence evaluation & baseline measurements.	Oct 2011
Stage 6	Annual reviews. Non-financial benefits reviews. 5 year Project audit and evaluation (post contract expiry.)	Ongoing

16.5 Project Organisation: Superstructure

A proactive approach is being taken to the management of the Birmingham New Hospitals Project. The Project is managed in line with the principles of the PRINCE 2 project management methodology (Projects in a Controlled Environment) and the majority of the project team members are fully trained PRINCE Practitioners.

The development of the post Financial Close Project Management Structure has been based on the following key tenets of the project;

- Continued Development: building on the established experience of the existing (and other NHS) Project Team(s)
- Ownership: the project structure has consistently sought to engage all stakeholders from inside and outside the Trusts at every stages of the process.
- Partnership: seeking to maximise synergistic gain.
- Corporate Governance and due diligence: in all aspects of decision making and throughout the hierarchy of the project.

To continue this approach, the Project Superstructure will consist of three main elements in a line relationship supported by key stakeholder groups being incorporated into these levels. The organisational chart for these arrangements is shown in **Figure 16-1** the elements of which are defined as:

16.5.1 The Project Board

This is the investment decision making body for the project and is a joint Project Board, which is answerable to the Board of Directors of the two Trusts. The Project Board includes senior representatives from the four constituent partners (the Trusts, University and Royal Centre for Defence Medicine) and is chaired by the Chairman of UHBT. The Project Board is a sub-committee of the Trust Boards and includes their Executive and Non–Executive Directors which incorporates the Bid Director for Consort Healthcare, as representative of the Trusts' private sector partner.

16.5.2 The Senior Responsible Owners Group

This group is a wide based executive steering group accountable for providing and maintaining the momentum of the whole project, and for monitoring its progress and

performance. The Group is led by the Chief Executive of the UHBT (the Senior Responsible Owner) who has direct responsibility in the construction phase for:

- Monitoring the application of the specified service modalities
- Overseeing of the development of the design and cost control
- Completing clinical functionality and design approvals
- Joint implementation of the schedules to the Project Agreement
- Control and implementation of Payments and the payment mechanism
- Monitoring project and contract performance

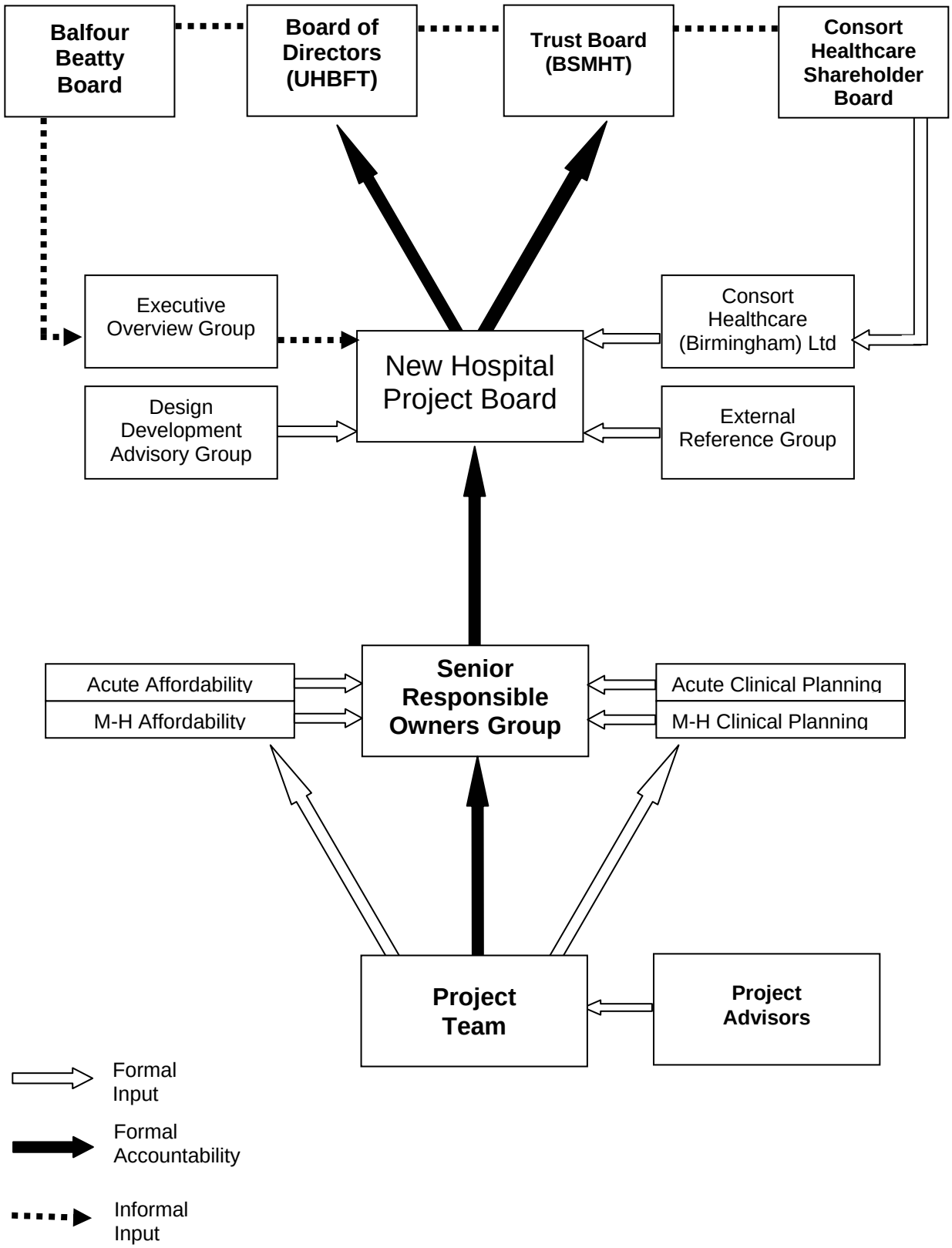
It brings together the Executive Directors and Project Directors of the procuring Trusts together with senior representatives of its partners (UoB & RCDM) and Patient Forums. It also includes appropriate Project Team members and advisors who are seconded to the group as circumstances dictate.

16.5.3 The Project Team

The Project Director leads the project team which is accountable to the SRO group for the management of the overall project. Its primary objective is to achieve the project's declared benefits with a minimum of risk to the Trusts' operational aspirations and within the agreed time and cost constraints. The Team co-ordinates and integrates the work streams of the Trusts' input to ensure:

- The project is successfully completed with the minimum of adverse impact on the Trusts, key stakeholders, patients and the local communities.

Figure 16-1: Project Organisation



- The clinical elements of the project are delivered effectively, to programme and cost without the risk of delay to the PFI element of the project.
- The quality established at Preferred Bidder stage is maintained throughout the construction and commissioning phases.
- Clear lines of communication and understanding exist between all the partners in the project and wide ranging stakeholders.
- Relationships are developed with private sector partners (PSPs) that are capable of producing a good business construct that is of mutual benefit to all parties and is sustainable over the next 40 years.
- All the support services required by the project, which are not the responsibility of the PSPs, are delivered in a timely and congruent manner within the overall project programme.
- Clinical functionality of the project remains sovereign through to completion and continues to be influenced by the clinical bodies of the Trusts and their key stakeholders
- A full and auditable record is maintained of all dealings, decision making and interactions that are likely to influence the final out turn of the project.

16.5.4 Project Board Support Groups

A continuing objective of the Trusts is to ensure that all Key Stakeholders are invited to participate in the development of the Project and to positively influence the final outturns of its services and facilities. In order to assist with this there are a number of groups shown in **Figure 16-1** that support the superstructure of the Project.

16.5.5 The External Reference Group

This provides support to the Project Board and is a forum for the effective communications and consultation with wider stakeholders with an interest in the project. These include patient representatives, local residents, ward committees, businesses, the voluntary sector and other interest groups. The External Reference Group is chaired by a member of the Project Board and has a remit to:

- Provide a forum for the active involvement of external stakeholders in the development of the project and to make report, as necessary, to the Project Board when issues arise.
- Ensure strategic fit with the wider health community and neighbouring developments such as road construction, the Sainsburys' adjoining development and other local regenerative projects
- Monitor the impact on local communities of construction activities and provide feedback on the effectiveness of Construction Management Plans.

16.5.6 Design Development Advisory Group

This group supports the Project Board and is responsible for monitoring the quality of design and to ensure that it reflects the Civic importance of the facilities that are provided. It is the forum through which the Design Champions of both Trusts receive local advice, monitor progress and influence the developing design. It is chaired by one of the Design Champions of the Trusts and includes external stakeholders and consultants.

16.5.7 Executive Overview Group

This is an informal meeting of Trust senior executives and the senior Executives of the Balfour Beatty Board. Their remit is to review overall progress and to discuss solutions to any points of difficulty or disagreement.

16.6 Senior Responsible Owner Support Groups

16.6.1 Acute and Mental Health Affordability Groups

Both the Acute and the Mental Health affordability groups oversee the total status and ability of each Trust to stay within the set financial limits of the project. The Groups are chaired by their respective Finance Directors and responsible for examination of all requests for changes that are likely to increase the cost in terms of either the Capex or Unitary Payment. Required variations above the delegated limits are referred to the Board.

16.6.2 Acute Clinical Planning Team

The Acute Clinical Planning Team consists of Clinician Practitioners drawn from a variety of operational backgrounds and has overall responsibility for engaging clinical opinion and advice on the clinical functionality of the design. It is chaired by the Medical Director and has been instrumental in developing the 1:200 and 1:50 scale plans. It will continue to be an essential part of developing clinical ownership in the detail of the final design.

16.6.3 Mental Health Clinical & Service Directors

This Group of Clinical Practitioners and Service Directors have been responsible for developing the 1:200 and 1:50 scale plans. It will continue to be an essential part of developing clinical ownership in the detail of the final design.

16.6.4 Consort Healthcare

At financial close Consort Healthcare (Birmingham) Limited will be formally established as the company that contracts with the Trust to deliver the project. Throughout the life of the concession, consort will have a dedicated management team on the QEMC site in an office shared with its construction and facilities management providers. This team will be led by the Bid Director who has led on the project from the Pre-Qualification stage. Together with the design and Construction Liaison Manager, who is already established on the project, this will provide essential continuity from the bidding phase through to the construction and service delivery phases.

Consort Healthcare (Birmingham) Limited will interface directly with the Trust Project Teams and will report to a Shareholder Board with senior representatives from Balfour Beatty, HSBC and RBS. The site based team will also provide direct input into the Trusts New Hospitals Project Board.

16.6.5 Consort Project Management Methodology

The Consort Project Management Methodology is encompassed within the overall Consort Company Management System. The system is developed to meet the minimum requirements of IS09001:2000 for Quality Systems. The system framework has been achieved independent accreditation and it is proposed that Consort Healthcare (Birmingham) Limited will also achieve this.

In furtherance of the quality Assurance Policy, the objectives of the CMS are:

- To provide the standards of service specified in the Client's stated requirements
- To provide confidence to both Client and Company Management that the completed works and service delivery will meet the specified requirements
- To implement Management Systems that ensure the management functions are carried out in an efficient manner
- To provide a vehicle for facilitating a continuous culture within the Company

The means of accomplishing these objectives shall be to maintain documented procedures and process flow charts as appropriate, which properly describe how the Company Business shall be organised and carried out, ad to ensure that these are implemented and where appropriate reviewed to provide continuous improvements to the processes identified.

The Design and Construction activities are shown in the Project Management Plan, which describes the methods of working and those responsible for carrying out the following activities:

- Admin
- Accounting, finance, insurance
- Time control
- Commercial and legal review
- Technical control

Reference is also made to BS6079-1, Guide to Project Management Plant.

16.7 Project Control and Approvals

16.7.1 Cost Control

A cost control protocol was set out in the preferred bidder letter jointly signed by the Trusts and Consort Healthcare, a copy of which is given at **Appendix 7C**. Any variations suggested by either party are reviewed with a cost estimate and funding location identified before being presented for formal written agreement by both parties. The protocol has been used and proven during the preferred bidder stage of the Project and has the support of all parties.

16.7.2 Delegated Authority

There is a formal hierarchy of delegated authority limits given to named individuals approved by each Trust but neither Trust has the authority to commit the other Trust to financial obligations. The Project Groups have no delegated authority in financial terms, other than the authorised limits of the Chairs as set out in each Trust's Standing Orders and Financial Instructions.

16.7.3 Design Approval Responsibility

The joint Trust structure of the BNHP procurement means that both Trust Boards are required to individually sign off the project documentation. It is normal to do this following a written recommendation by the Project Board. Detailed designs may be signed off by the appropriate groups only in respect of clinical functionality.

16.8 Structuring of Project Management

The focus of the Trusts in the construction and commissioning phase will centre on the practicalities of ensuring the Trusts receive the true content of its output specifications at the price, quality and time scale agreed. The raison d'etre of the Project Team and its structuring will be to make sure that the Trusts obtain full value from the project. In doing this, the Project Team will work closely with Consort Health Care in the implementation of the project and will provide advice and guidance to other Stakeholder Partners.

The team will be represented at Board Level of both Trusts by an Executive Director and led by a full time Project Director. He will be responsible for completion of the project on programme, within budget whilst resolving project generated and operational interface issues.

The key deliverables for the post financial close phase of the project are to be grouped into 3 distinct work streams associated with:

- Project control, risk management, commercial negotiation and the application of the Project Agreement
- Design progress, Construction Management and Technical control
- "In to use" management, equipment procurement planning and user commissioning

The areas of responsibility within these work streams are identified and detailed at Figure 16-2 together with the interfaces the project team will have with Transformation planning and Health systems development.

16.8.1 Project Control Management

The transition from procurement phase, to construction and commissioning will be complex and will present risks to the Trusts. These risks will be minimised by the co-ordination of involvement of people in the organisation. All the Directors of both Trusts will be engaged with the project with varying commitment over the next 6 or so years. Effective leadership and project management will continue being exercised through to the completion of the project in 2011.

Over the course of the construction phase the “contract” will become the centre of the relationship with the Private Sector Partners. Its complexity and length add to the risk. The level and maintenance of risk transfer, the final outturn of the construction phase and the operational performance (and sanctions) of the contract will be managed by Project Control. It will develop a keen understanding of all aspects of the contract so that it can respond quickly and accurately to any areas of disagreements.

The creation of a Contract Manager within the team is a prudent way of protecting the Trusts in this respect and is likely to be similarly featured in the structure to be created by the PSPs. The negotiation to be completed after Financial Close and the outcomes of these negotiations will affect the Trust’s affordability, timetable for the “in use” date and the back siphoning of risk transfer. The contract manager will be an influential and determinant factor in the negotiating process and subsequently the operational phase.

As part of the basic skills capability, the project team will retain financial and legal support but in a less focused manner than the two previous phases have demanded. Audit and project control (e.g. contract variation procedures and application of the Project Agreement) together with risk minimisation will support the new focus of Design/Construction and Commissioning processes.

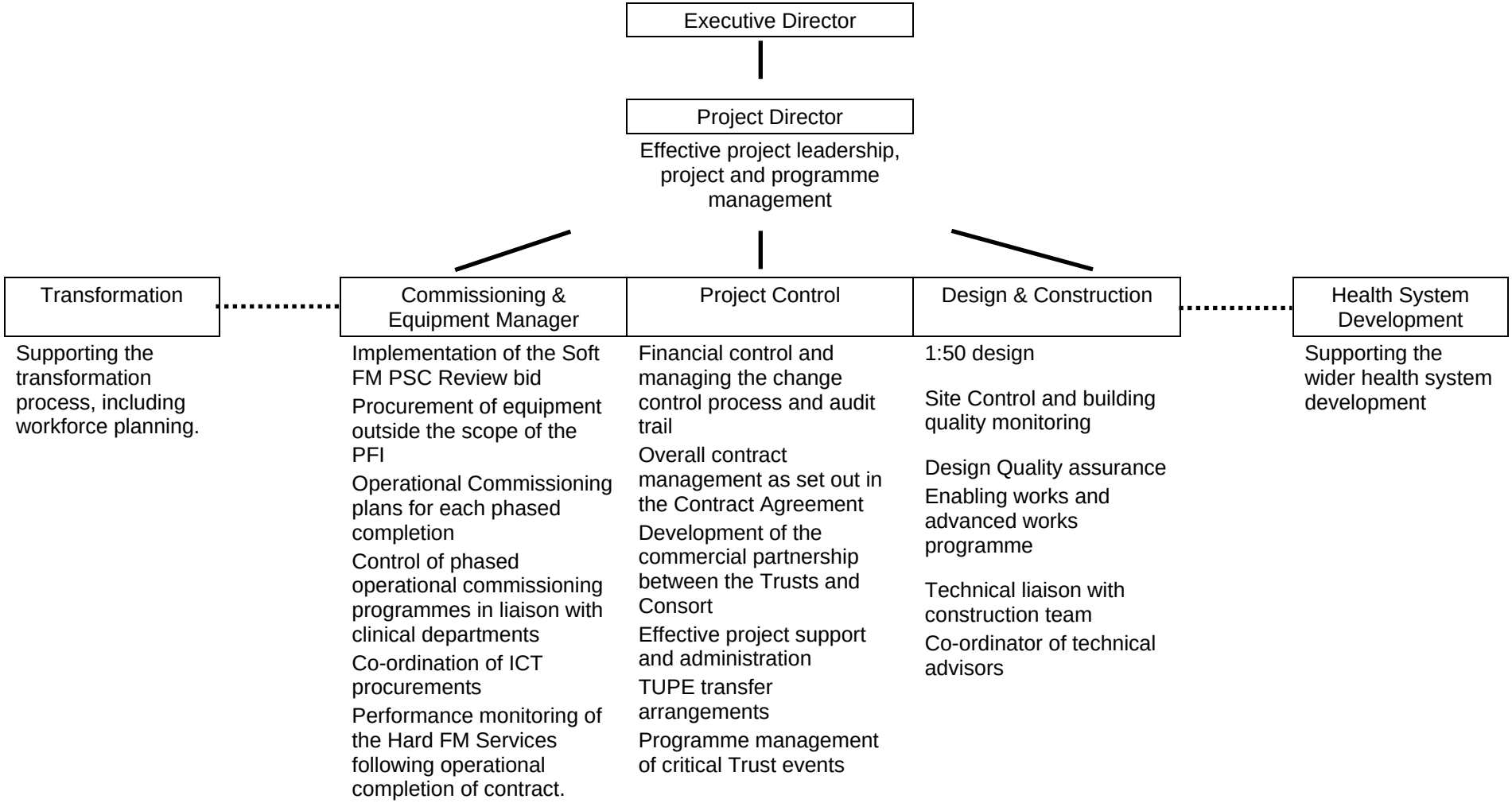
16.8.2 Dependencies and Interdependencies

The Trusts recognise that this project forms part of the overall transformation of the healthcare programme in Birmingham. The project inter-relates with the transformation of these services that is taking place in the southern acute sector and the local community. There is an over-arching management arrangement being developed in the Trusts to manage this transition and the project forms part of that group. This interchange will be managed so that the transformation process is fully informed about the development of the new hospitals and vice versa.

16.8.3 Design and Construction Liaison

The high risks anticipated in converting the design proposals from those defined at Financial Close to a built scheme will be managed by a technical control group. The emphasis from the Trusts' perspective will be on healthcare planning and completing the detailed design which is expected to take twelve months. As the design becomes progressively “frozen” the clinical input into the design will gradually diminish and be replaced with an increasing emphasis on building and site control. In part, this begins to take on the mantle of the more traditional aspects of construction management associated with site working, safety and interfacing the construction with continuing operation of the hospital.

Figure 16-2: Project Management Structure



Direct control over the quality of materials and inputs to the finished product are limited with this form of contract. The risks associated with potential quality adjustments as a consequence of time and budget overruns will be monitored and identified by the Design and Construction work stream. The project team will have its own architectural and engineering capability to work with the joint Independent Tester, to be able to obviate or at least neutralise these risks.

This work stream will co-ordinate the service and utilities interface between the continuing operation of the site, the upgrading of the retained estate and the new build elements of the project.

16.8.4 Commissioning and Equipment procurement

The Operational Commissioning role relates to ensuring that all the equipment and services required to bring the building(s) into operational use are put into place with the minimum disruption to clinical services. This responsibility has increased with the rescinding of the PSP's involvement in both the Managed Equipment Service and the provision of soft FM services.

The responsibilities of this work stream will also include transferring hard FM Services to Consort, establishing a Contract Monitoring regime to ensure that the Trusts' output requirements are met and co-ordinating related procurements such as equipment, Electronic Patient Records and Picture Archiving and Communications System (PACS). These tasks will be fully synchronised with Consort's Construction and Technical Commissioning Programme and will include the management of the physical transfer of equipment, furniture and personnel into the new facilities.

16.9 Health System Development

In parallel with the project construction phase there will be ongoing dialogue within the health economy to ensure co-ordination of capital developments consistent with the NHS Implementation Plan and the long term strategic framework published by the Birmingham and Black Country Strategic Health Authority. The Project Director, therefore, will retain firm links with the Chief Operating Officer and the Director of Planning, Policy and Performance Management to ensure that the on-going developments are incorporated into the design and subsequent operation of the new hospital.

16.10 Communications and Public Relationships

In order to control risks the Project will continue to maintain a capability in respect of Public Relations and communications from a wider organisational perspective. Key to the success of this is timely communication with all the stakeholders both internal and external to the Trust.

The overall communications objectives remain unchanged but they have been enhanced following the ongoing development of the project. They can be summarised as:

- To gain stakeholder commitment and support for the underlying case for change, the service models and the planning assumptions, and the wider benefits of the preferred option
- To generate a positive and supportive environment in order to facilitate a successful procurement under the PFI
- To allay any public and staff anxieties regarding procurement under the PFI
- To ensure consistency of communications emanating from the Trust and partner organisations
- To reduce the risk of delays to the project timetable caused by lack on information and misunderstanding

16.11 Corporate Memory

16.11.1 In House

The loss of corporate memory is a significant risk to the Trusts and could be a major impediment to a quality completion when the project becomes operational. There are currently several members of the acute and mental health teams who have in-depth knowledge of parts of the project. It is likely that project team members will either be approached by other projects for their knowledge or may consider their task as being complete at FC and leave the Trust. It is essential for the control and management of the risks that the Trusts will inevitably face, that key elements of memory are retained well into the early phase of operation. The key elements relate to the development of the Contract, Payment Mechanism, Equipping and clinical functionality (the design). These elements are well understood within the core group of team members taking the project to FC. Positive action has been, and will continue to be, taken to ensure their continued support over the next 6 years. A core of project team members have indicated that they would like to stay with the project in one role or another and their needs are being addressed.

The Trusts Corporate Memory has developed essentially around leaders of key issues within the project including:

UHBFT

- Finance, payment mechanism and contract negotiations
- Hard and Soft FM service negotiation and equipment procurement
- Design and Clinical functionality
- Technical Design, construction and overall estate negotiations (also in-depth knowledge of Trust capital Developments and enabling works)

BSMHT

- MH Design and contract negotiations
- Technical Design and contract negotiations

16.11.2 External Advisors

The Project Team will continue with the support of the technical advisors that have been a part of the project to date. This requirement is likely to be reduced particularly in finance and legal services but all of the consultants contribute to the corporate memory of the Project and which will need to be protected by the Trusts. This will be achieved by re-negotiating and extending their commissions appropriate to their forecast individual input to the project through the construction phase. Each of the Advisors that have been engaged in the planning and procurement phases of the project have indicated their commitment to continuing in their roles as advisors

BENEFITS REALISATION

17.1 Introduction

The Outline Business Case (OBC) for BNHP, approved in April 2002, gave a commitment to develop a Benefits Realisation Plan in the Full Business Case (FBC).

The benefit criteria were agreed at OBC stage and are rehearsed in Appendix 5A. The benefits that are to be accrued through the implementation of the PFI project have been described in earlier sections of this document, most notably Chapter 8. Many of the benefits that accrue to the project would have been realised whether the project was funded via PFI or through implementation of the Public Sector Comparator.

However, a number of benefits only accrue through adoption of the PFI scheme. These are:

- During construction, the transfer of planning/design of construction risks to Consort
- During operation, certainty of Hard FM operational costs
- PFI acute solution has better clinical adjacencies and synergies. For example the PFI scheme has a dedicated ambulatory/outpatient floor, whereas PSC has the facilities dispersed throughout the building. Also distance of travel from some of the wards to inpatient facilities is reduced in the PFI solution
- PSC acute solution is a more heavily massed building than PFI solution. PFI solution is better for local residents, employees and patients
- PFI solution enjoys guarantee of ongoing maintenance over 35 years of concession. Continual, planned investment in facilities maintenance will ensure minimum standards of infrastructure maintained
- Trusts have reduced risks, particularly construction risks, under PFI

A full benefits realisation plan is provided on the following pages.

The organisational processes and structures required to deliver the plan are being developed. They will be based around the following:

- The development of a user group structure to take on the role of delivering real scheme related benefits.
- The implementation of the electronic patient records and NPfIT systems to act as the technological backbone for the development of integrated care pathways across the primary and secondary care divide.

The Trusts intend to use existing performance monitoring systems as much as possible in measuring the realisation of the benefits of the scheme. This includes regular monitoring reports that include:

- Standard quality measures.
- Routine monitoring of NHS-wide issues, particularly access targets.
- The results of routine patient satisfaction surveys, conducted by the Trusts' existing quality assurance teams which address all aspects of patient care.
- Feedback from regular Service User Forum events.
- Complaints analysis.
- Staff satisfaction surveys.
- Recruitment and Retention of Staff.

17.2 Realising Benefits

Table 17-1: Realisation - Non Clinical

Objective	Benefits	How Delivered	Responsibility For Delivery	Success Measurement
Enhanced Quality Of Facilities	• User-friendly buildings with logical layout, supported by information services and good signage. • A range of therapeutic spaces both internally and externally • Safe and secure facility for patients, visitors and staff. • Meets the needs of a diverse community (age, faith, ethnic and disability issues).	New hospitals facilities are built to meet requirements of clinical output specifications and the Trust Construction Requirements, including in particular, the Disability Discrimination Act (1995). Women only rooms Child Visiting rooms	Acute & Mental HealthTrust Project Director Consort Project Director	Consort measured against performance standards. Patient, staff and community surveys. Reduction in incidents related to DOA, ergonomics building related accidents.
Meeting The Requirements Of The Patient's Charter and NHS Plan/National Service Frameworks Compliance	• Facilitating one stop patient visits, wherever possible, by providing a focal point for all services associated with a particular specialty thereby minimising travelling distances between departments. • Provision of single rooms with ensuite bathrooms, and single sex wards. • Enhanced privacy and dignity. • Provision of facilities to deal sensitively with death and bereavement. • Provision of facilities for relatives and families, including patient and carer hotel accommodation.	New buildings facilitate the introduction of the new models of care in each Trust. The new facilities and services have significantly better functional relationships and enhanced spaces. Advocacy and User Voice rooms near entrance areas Continuity between community and inpatient services	Transformation Board Clinical & Service Directors Clinical Triumvirates Acute & Mental HealthTrust Project Director Consort Project Director	Improved clinical performance including waiting times. Reduction in the number of inappropriate admissions. Audit and performance review. Reduced occupancy. Improved satisfaction results from patient surveys and other patient interactions.
Integrated Approach To Education, Training, Research & Development Activities	• Closer working relationships with research departments in neighbouring institutions, e.g., Universities and Defence Evaluation and Research Agency. • Able to respond to increasing in Undergraduate and Post Graduate training. • Improved recruitment and retention of staff.	Provision of purpose designed and equipped internal education facilities. Collocation of bespoke University accommodation with clinical services Training and Educational spaces embedded into ward areas.	Trust Boards Triumvirates Acute & Mental HealthTrust Project Director Consort Project Director	Enhanced output of research products. Monitoring staff turnover. Improved skills profile.

Table 17-1: Realisation - Non Clinical				
Objective	**Benefits**	**How Delivered**	**Responsibility For Delivery**	**Success Measurement**
Provision Of Staff Focused Environment	• Cohesive staff culture. • Improved recruitment and retention of staff. • Reduction in levels of sickness and absence • Efficient utilisation of staff time to deliver new models of care.	Development and implementation of a charter for staff. IWL Initiatives Introduction of junior doctors rotas and clinical staffing arrangements within clinical aggregations to support the new models of care.	Trust Boards Clinical Triumvirates	Improved levels of satisfaction indicated by staff surveys. Improved recruitment and retention of staff. Reduced sickness and absence.
Provision Of Modern Environment	• Well designed bright, clean with a pleasant outlook and external surroundings. • Good levels of natural light and ventilation. • Easy to maintain with statutory standards addressed. • Addresses 'green' issues: low energy usage, recycling facilitated and limited impact on the facilities' surroundings.	The opening of the new hospital facilities will provide the modern environment that meets the requirements set out in the Trust Construction Requirements and reflected in the Clinical and Non-clinical Output Specifications.	Acute & Mental HealthTrust Project Director Consort Project Director	Monitoring of performance standards. Patient, staff and community surveys. PEAT.
Improved Accessibility For Patients, Visitors and Staff	• Efficient public transport and highways infrastructure. • Services provided close to a major centre of demand. • Development of more local services • Facilitates transfer of services to wider health community. • Good access for air ambulance.	Whole site master planning, including improved road system, non-vehicular travel routes and transport hub. Physical layout of building reflects improved models of care including peri-acute care. Green Transport Plan Helicopter landing facilities on site.	Acute & Mental HealthTrust Project Director Consort Project Director	Meeting performance standards. Less patient transfers. Improved levels of satisfaction indicated by patient, visitor and staff surveys.
Future Flexibility	• Capable of expansion and accommodating changing demand, clinical techniques and new services. • Allows for evolution of community-based services. • Generic wards and OPD clinics	Planned expansion spaces identified within the current design solutions Design and services infrastructure will allow future change of use. Implementation of locality based model of care for Mental Health Services	Trust Boards Transformation Board Acute & Mental HealthTrust Project Director Consort Project Director	Scrutiny of design to accommodate change scenarios Future expansion achieved as and when required.
Minimise the adverse impact of construction	• Removes the need for many piecemeal developments that	Agree a robust Construction Management Plan with	Acute & Mental HealthTrust Project Director	Monitoring noise, dust and vibration against targets in the Construction

Table 17-1: Realisation - Non Clinical				
Objective	**Benefits**	**How Delivered**	**Responsibility For Delivery**	**Success Measurement**
	would otherwise have needed to be implemented with significant disruption to existing services. • Maintaining access to and around the hospital sites (QEMC and Moseley Hall) • Ability to continue to provide clinical services in a safe and appropriate manner. • Maintaining good relations with the Trusts' neighbours during construction • Minimal or no loss of car parking provision	Consort. Consultation with local residents and other third party interests Published communication channels for complaints Creation of employment and training opportunities Advanced Works Agreement to reprovide car parking	Consort Project Director Birmingham City Council Heads of Planning and Highways	Management Plan. Close liaison with neighbourhood representatives Car parking capacity and accessibility maintained during construction. Success of employment and training opportunities
Enhanced Stakeholder Satisfaction	• Active support for the Project from patients, staff, the local communities and other stakeholders • Integral to urban regeneration and other economic strategies	Pro-active approach to Stakeholder communications and consultation Maintain close working arrangements with Local Authority and local businesses.	Acute & Mental HealthTrust Project Director	Provision of Helplines and key contact points to monitor public perceptions.

Table 17-2: Benefits Realisation - Clinical				
Objective	**Benefits**	**How Delivered**	**Responsibility For Delivery**	**Success Measurement**
Clinical Effectiveness	• Reduces lengths of stay, hospitalisation rates and re-admission rates • Reduced admissions and occupancy • Alternatives to hospital admission • Improves targeting of local health economy resources	Continual monitoring and reporting of activity and performances Action plans for exceptions against plan Development of Community Treatment Teams Smaller wards (16 beds) Better ward design to improve observation The 3 'P's' – Public, Public/Private and Private Improved staff skill mix working in different ways	Trust Board	Continual positive trends in all areas of performance – admissions, occupancy. All targets met Payment by results delivers income against plan Clinical Audit Programme Comments and Complaints Patient Satisfaction Surveys
Clinical Efficiency	• Inter-related departments located adjacently, with clinical support services nearby • Avoids duplication and dislocation of clinical services	Built into design Reviewed by users before 1:50 sign-off	Acute & Mental HealthTrust Project Director Consort Project Director	Design PPE demonstrates that all aspects of models of care can be met. No bottlenecks
Well-Equipped, Appropriate Facilities	• Well-equipped facilities • Appropriate facilities • Domestic environment	Equipment Strategy and procurement developed with users Identification of transfer equipment	Acute & Mental HealthTrust Project Director Consort Project Director	Pleasant, comfortable environment for patients, visitors and staff Access targets met. No bottlenecks
Quality of Care	• Improved staff ratios • Emergency back-up close at hand • All relevant specialities immediately available to patients	Clinical adjacencies built into design	Directors of Clinical Quality	Lower mortality and morbidity following on-site problems Positive patient satisfaction results
Quality of Outcome	• Inter-related clinical departments located adjacently • Emergency back-up close at hand	Built into design	Directors of Clinical Quality	Lower mortality and morbidity following on-site problems Positive patient satisfaction results

17.3 Cash Releasing Benefits Realisation

The majority of the benefits identified above relate to the qualitative benefits which will be realised through the implementation of the project.

However, the acute element of the scheme also has some cash releasing benefits; there are no cash-releasing benefits attributable to mental health.

The overall acute cash-releasing benefits are summarised in the table below:

Table 17-3: Schedule of Cash-Releasing Benefits

	Cash-Releasing Benefit (£'000)
Nursing Pay	£3393
Diagnostics	£364
Non-Clinical Services	£2236
Building running costs	(£2004)
Other	£2000
Total	**£5989**

Notes: all quantities are at 2004/05 prices.

The net savings which the Trust expects to accrue for the development are just under £6 million. This figure includes £2m which the Trust does not have a specific plan to implement. Of this only £1m has to be delivered in the next 5 years with a further £1m in 2015/16. The £1m would only increase the CIP targets for the next five years by less than 0.1% per annum and the Trust is confident that this can be delivered.

A more detailed description of the individual savings is included at **Appendix 17A**.

The Nursing savings are the result of the implementation of the new nursing workforce plans described in **Appendix 10A** when applied to the beds deployed in the new hospital for current activity. Overall Nursing costs for the Trust increase when growth is taken into account so the main challenge in achieving these savings is in respect of training and managing a skill mix adjustment.

The diagnostic savings are in the main achieved by single site working and detailed plans exist to cover these.

The other major area of cost saving is in reducing administration and management costs in respect of technological advance. Detailed implementation plans are being drawn up by the transformation group.

These savings, although cash releasing, are all redeployed to fund the cost implications and quality improvements inherent in the move to the new hospital. These savings would need to be redeployed whether the scheme was to be funded from public capital or through PFI.

The responsibility for delivering these cash-releasing savings lies with the Director responsible for each functional area, working with the Director of Finance and his team.

These savings represent £6.9 million out of total Trust revenues of £360 million at 2005/6 budget levels, an efficiency saving of 1.9% arising from the development.

The Trust believes that these savings are prudent and deliverable.

17.4 IM&T Benefits Realisation

Benefits relating to implementation of IM&T in the new hospital fall outwith the scope of this Full Business Case and will form part of the overall Business Case for the implementation of the National IM&T Procurement.

RISK MANAGEMENT STRATEGY

18.1 Introduction

The financial implications of the agreed risk transfer are set out in Chapter 9.

To achieve this:

- The Trusts have identified and agreed an optimal share of the risks involved in this project with Consort
- A set of robust management actions has been put in place to manage the risks which the Trusts retain

A summary of the full risk register and the management strategies to be initiated by the Trust in reviewing the risks that are retained is provided in the schedules **Appendix 18A**. The full risk register is available in **Appendix 9E**.

18.2 Key Risks

The most critical risks remaining at financial close are as follows:

Table 18-1 : Key Risks Identified

Risk	Trust Management Actions
Delay in delivering Hospital Link Road (by BCC) & Phase 1 Selly Oak Northern Relief Road (by Sainsbury's) causing implications for access to the hospital.	Although Consort have now agreed to provide part of the road system, continued liaison between the Trust, Consort and Birmingham City Council /Sainsburys will be required to ensure timetables are in harmony. If relief road is not completed then the current hospital main entrance will be used until the new main entrance is ready.
Moseley Hall Planning Approval - Local residents apply for a Judicial Review of the Planning Approval Process.	A revised Planning Application has been successfully determined by BCC and a Judicial Review rebutted. There are a number of conditions attached which may too be subject to a JR claim. The Trust and Project Co will work closely with planning officers to ensure that all conditions are adequately discharged.
The PCTs may struggle to afford the significant stepped increase in costs when the new facilities open.	The SHA is to take the lead on developing a transition plan for PCT affordability to ensure that this does not happen. Costs have been lowered temporarily by the provision of some ward space as shelled accommodation until activity flows become clearer.
Delay in exercising contract variations will incur significant costs.	The Trusts will need to ensure that the business cases supporting the variations are kept current so that variations can be exercised at short notice if necessary, or to allow decisions to delay to be made on the best available information.

For completeness, the full set of risks have been included at **Appendix 18A** but those that are not the Trusts' risks have been flagged "NTR". The Trusts' retained risks are referenced with a black box.

The Trusts acknowledge that the degree of identified risk, as well as potential risks that have not yet been identified, will change during the course of the Project. The Trust's risk evaluation and management processes will also evolve to ensure that potential impacts are minimised.

18.3 Demand Risk Scenarios

Of particular interest to local stakeholders is the question of whether the new acute hospital could prove to be too big or too small.

Since the OBC was approved there have been significant changes in government policy which have the potential to impact on the future demand for hospital services.

- **Target Reduction in Non-elective bed days :** the government has set a target for PCTs to reduce non-elective bed days by 5% over 3 years based on the 2003/4 baseline position. This means that if emergency admissions continue to rise, the associated bed days consumed must be added to the target, consequently making it more difficult to achieve. This target is mutually compatible with the requirement - and PCT undertaking - to develop community-based services incorporated into the business case.
- **18 week Diagnosis to Treatment target :** In the NHS Improvement Plan, the Department of Health sets out its ambition that no one will wait longer than 18 weeks from GP referral to hospital treatment by 2008.
- **Independent Sector Treatment Centres :** The NHS Improvement Plan signals that independent sector providers will increase their contribution to the delivery of NHS care and may provide up to 15% of surgical procedures by 2008.
- **Choose and Book :** Every patient is to be offered at least five choices of provider for elective treatments.
- **Practice-based Commissioning :** Practice based commissioning, coupled with Payment by Results, is intended to encourage a greater shift of services between secondary and primary care and additional services to be available in community settings.

In addition a number of local strategic initiatives have been considered.

- UHB has prepared a Renal Strategy which proposes the reorganisation of Renal care across the current catchment area.
- The Trust’s recent designation as a specialist burns centre will likely create additional tertiary adult burns activity.
- The Cancer Network have agreed to centralise specialist Uro-oncology activity at UHB from City and Sandwell.
- Head and Neck Cancers will be centralised at UHB and specialist activity will be transferred from City and Heartlands.
- Additional ENT activity is expected from Good Hope Hospital.
- Outpatient HIV activity is seeing exponential growth with a potential knock-on effect on future inpatient work.

With the exception of renal services, where the aim is to develop a more community-based dialysis service supported by a specialist centre (which will only have the impact of containing

activity within current capacity), all of the above developments would bring new work to UHB and increase the demand for beds.

Each of these developments is currently under discussion with local stakeholders. The activity implications are currently being modelled and do not yet feature in the FBC projections.

18.3.1 Scenario Analysis

An analysis of the key scenarios is presented in table 18-2 overleaf. Each scenario has been assigned a probability and an estimate of the consequent impact on bed numbers is given. Given the uncertainty around many of these issues, a range of outcomes has been offered.

Based on current trends in hospital activity, projection models for the new hospital are consistently showing that the new hospital requires just over 1200 beds with capacity equivalent to an additional 60 beds being provided in the community.

Using the latest data and trends, the Trust has confirmed that the capacity of the new hospital is appropriate for the levels of activity predicted and that the associated performance targets can be achieved. However, this relies on the assumption that community based alternatives to hospitals stays will be implemented. The analysis makes it clear that the most pressing issue for the Trust and PCTs is to reduce the increase in bed days occupied by emergency admissions. The worst case scenario – where occupied bed days revert to previously witnessed trends and performance targets are not met - could see the Trust short of around 200 beds.

Based on an initial analysis of the current years activity, however, it would seem that lengths of stay are falling as the vast majority of new patients are only admitted for a short stay and are often discharged on the same day. This is in part the result of specific initiatives by the Trust to alter admissions protocols and provide additional assessment capacity. The Trust expects this trend to continue so the risks to actual bed numbers are lessened. For the sake of prudence, the scenario analysis has been undertaken to identify the upper bounds of the associated risks though the Trust is confident that the probabilities of these scenarios will continue to be reduced as more of the current trend is revealed.

At the time of submission, 108 beds in the FBC are to be shelved temporarily and are subject to a contract variation which can be exercised in the first 18 months of the construction period. This will allow the activity trends to be monitored more closely to ensure that these beds are in fact needed before the commitment to incur the costs is made.

With 57% of non-elective bed days originating from the immediate Trust catchment, the risk associated with emergency occupied bed days is primarily shared with South Birmingham PCT and it is clear the two organisations will need to work closely together to alleviate this concern. The PCT have given considerable thought to managing the demand risk. Given the expanded investment in chronic disease management through both PCT strategic investments, increased primary care prescribing and the new GMS contract, the risk that the hospital is too small is now considered to be quite low. This is because the cumulative impact of these measures is expected to achieve increased chronic disease management in primary care.

UHB has already agreed with South Birmingham PCT that heart failure, diabetes and respiratory conditions will be the first conditions for which the PCT and UHB will take forward new service models. These are at an early stage of planning but both the Trust and PCT recognise that early implementation will be necessary if the rise in emergency admissions is to be taken under control.

18.3.2 Contingency Plans

Should the Trust and PCT struggle to control admissions or accommodate activity within the available capacity, the Trust has a number of possible contingencies which could be brought into play:

- Exercise the variation to fit out the shelled ward space to provide the extra 108 beds that are projected to be required in line with the original plan.
- Bring the 18 bed decant ward on-line
- Relocate the education centre and use the space for additional beds. This would provide space for an additional 72 beds
- Relax the occupancy target from 82% up to a maximum of 90%. Excluding the intensively staffed bed complement this would generate an additional 90 available beds, with pro rata additional bed numbers if occupancy rates are relaxed to a level between 82% and 90%
- Increase the level of ward space in the main hospital by implementing one of the expansion options built into the design, the first one of these being to develop a ward block adjacent to the ambulatory care facilities. This would provide a minimum of an additional 72 beds and could be expanded further.

Should the acute hospital prove to be too big in the future, the Trust believes that there is the potential for further rationalisation of acute services in Birmingham which would facilitate the transfer of more services onto the new hospital site to optimise overall estate utilisation.

It may also be possible to lease capacity to the private sector as a second option.

18.4 Mental Health Risk and Contingency

The demand for mental health beds is in some ways even more difficult to predict than for acute services. Since the 1990s, mental health services have generally become increasingly community focussed however, the nature of much of the current adult workload is such that inpatient treatment is still necessary for some patients. In predicting the provision of adult beds in the new service, BSMHT has planned to increase the current number of adult beds from 90 to 96, an increase of 6. Treatment places have also been created to provide alternatives to hospital admission and these include Home Treatment Teams, Crisis Houses, Respite Care and Crisis Resolution. There are 183 adult treatment places in total.

Should this prove to be inadequate, the initial contingency for mental health is to seek Commissioner support to further strengthen the Community Teams to increase capacity. *They may also relax some of the occupancy assumptions made in this case*. Also the current designs have been developed to maximise flexibility of space to enable the Trust to respond to changing patterns of morbidity and advancements in treatment. Expansion zones are also identified.

With the merger of the two Trusts there may be further capacity to be derived from the new 900 bed compliment available to BSMHT. This may be particularly true in the inner City HoB PCT catchment area that previously straddled the two former Trusts.

The locality model of service delivery also gives flexibility and if additional beds were required in the future, then a business case would be developed for a new unit in the most geographically appropriate location.

Should the demand for in-patient beds reduced, and national statistics of inner City services would not support the likelihood of this occurring, then the Trust would look to close some older, not fit for purpose estate.

Table 18-2 : Demand Sensitivity Analysis

		Potential Impact on Beds	
Risk Issue	**Probability**	**Low**	**High**
What if PCTs fail to reprovide the equivalent of 60 beds of intermediate care activity? If these services are not developed then it is assumed patients would continue to flow to the acute hospital.	Low	60	100
What if the target to reduce non-elective bed days by 5% over 3 years is not met? The target translates to a reduction of 13,500 OBDs based on the 2003/4 baseline. The FBC modelling assumes that 80% of this target would be achieved by avoiding admissions and 20% by facilitating early discharges. If emergency admissions continue to rise by 5% pa over the next three years, there would be a proportionate increase on the pressure on beds in the future. However, current data for 2004/5 appears to indicate that the target reduction in OBDs is clearly in sight and any concern that the 2003/4 increases would continue have been significantly alleviated.	Low	22	52
What if the subsequent increase in emergency admissions is not avoided? The recent trend predicts up to 46,000 emergency admissions by 2011 but assumes that around 6000 of these would be avoided by developments in primary care. The corresponding bed days avoided amounts to 23,700 after allowing for the 5% OBD reduction. The worst case scenario is that the Trust sees all the predicted admissions and is unable to reduce the length of stay.	Medium	36	88
What is the potential impact of a local Independent Sector Treatment Centre? There are currently no known plans for an ISTC to be located in South Birmingham. In the short term, the development of a local ITC would present both a threat and an opportunity for the Trust. However, only a small proportion of elective work would be likely to be affected; tertiary specialties would not be provided in an ITC. The impact of a local ITC specialising in the following common ITC services is estimated to be as shown:	Low		
Orthopaedics : Virtually no impact as UHB does not host this specialty		0	0
Ophthalmology : Very low bed usage		-3	-6.5
Minor procedures : Assuming half current day case mix		-10	-30

		Potential Impact on Beds	
Risk Issue	**Probability**	**Low**	**High**
Patient Choice			
Given the Trust's current performance, in terms of low waiting times, quality, expertise and reputation, coupled with the outstanding facilities the new hospital will provide, UHB will be in a strong position to thrive in a market of greater choice. It is impossible to say how the Choice Agenda will play out but the Trust is more likely to gain rather than lose activity, even more so when the new hospital opens. The sensitivity of patient choice to bed demand assuming that routine elective work could flow into or out of the Trust as a result of choice is presented as follows:			
5% shift in routine elective flows in or out of the Trust		-4	4
10% shift in routine elective flows in or out of the Trust		-8	8
15% shift in routine elective flows in or out of the Trust		-12	12
20% shift in routine elective flows in or out of the Trust		-16	16
Practice Based Commissioning			
It is not clear how quickly this new initiative will be taken up in Birmingham.. Any move in this direction is more likely to affect outpatient demand than elective inpatient work though the introduction of new ways of managing chronic disease will alleviate some of the pressures on emergency beds mentioned above.			

POST PROJECT EVALUATION

19.1 Summary

- The Post Project Evaluation (PPE) Plan for the Birmingham New Hospital Project has been developed in accordance with the Department of Health Good Practice Guide. It is mandatory for the PPE Report to be submitted to the DoH.
- This Chapter sets out the plans which the Trusts have put in place to undertake a thorough post project evaluation.
- Definitions used in the evaluation process are provided at **Appendix 19A**.

19.2 Overview of Process and Timescale

The evaluation of this project will not be finalised until the middle of the next decade, following completion of the building works and around three years of operational running of the new facilities and service models.

However, there will be a number of key stages leading up to this point as summarised in the table below:

Table 19-1: Post Project Evaluation Stages

PPE Stage	Timing	Lead	Table Ref
Project and Procurement Review	2006	Trust Board	19-2
Construction and Commissioning Review	2009 - 2011	Independent	19-3
Operational Review	2011 - 2015	Trust Board	19-4

Within each stage, a number of evaluations and audits will be undertaken, requiring a range of reviews and assessments. Ultimate responsibility for initiating and reporting on these reviews rests with the Boards of the two Trusts, and specifically the incumbent Directors of Planning and Development.

In the first three years after opening of the new facilities, an operational review should be performed comparing the prevailing activity, performance and service models with those predicated in this FBC.

Table 19-2: Methodology for Evaluating the Project and Procurement Stage			
Attribute to be Evaluated	**Timing**	**Method of evaluation**	**Evaluators**
Effectiveness of the Project Team			
• Robustness of the team • The right skills were in place • The team were properly resourced • Outputs were delivered in a timely way • Outputs were of a high quality • Communication was satisfactory • Change was well managed • Reporting on progress was satisfactory • The internal Trust organisation was supportive of the Team • Internal consultation was well managed • Commercial confidentiality was respected • Advisers were well managed • Appropriate feedback was given • Sufficient contact was provided to users during the process • Overall impressions of the project delivery • Aspects which were particularly well managed • Aspects where there was room for improvement	Within 6 months of F/C	Structured questionnaire Face to face interviews	• Board of Directors/Trust Board and Management Teams • Project Team • External advisers • Trust User Groups • Trade Union Representatives • Final two PFI bidders • Strategic Health Authority • Local Primary Care Trusts • Department of Health Private Finance Unit
Project Documentation			
• Content • Presentation & Style • Substance • Clarity • Timeliness of Document Issue • Overall usefulness • Structure • Aspects which were exemplars • Aspects where there was room for improvement	Within 6 months of F/C	Structured questionnaire	• Board of Directors/Trust Board and Management Teams • Project Team • External advisers • Three shortlisted PFI bidders • Two final PFI bidders • Department of Health Private Finance Unit

Table 19-2: Methodology for Evaluating the Project and Procurement Stage			
Attribute to be Evaluated	**Timing**	**Method of evaluation**	**Evaluators**
Communications and Involvement During Procurement			
• Internal consultation well managed • External consultation well managed • Timeliness of communications • Effectiveness of involvement sought • Aspects which were undertaken well • Aspects where there was room for improvement	Within 6 months of F/C	Structured questionnaire	• Board of Directors/Trust Board and Management Teams • Project Team • Two shortlisted PFI bidders • Local PCTs • User groups • TU Representatives • Patient Groups
Effectiveness of Advisers			
• Quality of advice • Timeliness of advice • Value for money • Problem-solving • Accessibility • Overall Contribution • Areas of exemplary performance • Areas for improvement	Within 6 months of F/C	Structured questionnaire	• Board of Directors/Trust Board and Management Teams • Project Team • Final two PFI bidders • Department of Health PFU
Effectiveness of NHS Guidance			
• Comprehensive • Comprehensible • User-friendly • Addressed key issues well • Areas which are exemplary • Areas where there is room for improvement	Within 6 months of F/C	Structured questionnaire	• Project Team • External advisers
Support from Department of Health			
• Responsive • Timely • Supportive	Within 6 months of F/C	Structured Questionnaire	• Project Team • External Advisers • PFI Partner

Table 19-2: Methodology for Evaluating the Project and Procurement Stage			
Attribute to be Evaluated	**Timing**	**Method of evaluation**	**Evaluators**
• Pro-active • Facilitative			
FBC and Procurement Process			
• Identify overall costs of PFI process • Review timetable to achieve financial close • Review planned development against strategic objectives • Production of FBC and availability	Within 6 months of F/C	Audit Benchmarks against plan and other schemes Structured Questionnaire Timeliness after financial close	• Project Team • Director of Finance (Two) • Board of Directors/Trust Board

Table 19-3: Methodology for Evaluating the Construction and Commissioning Stage			
Attribute to be Evaluated	**Timing**	**Method of evaluation**	**Evaluators**
Construction Preview			
• Research construction PPEs from other PFI schemes	Approx 8 months after FC	Collection and collation of key learning points	• Project Team
• Determine approach to transferring lessons learned to BNHP	Approx 9 months after FC	Internal team meeting	• Project Team
• Stakeholder Day (TBC)	Approx 10 months after FC	Day workshop with managers of other schemes	• Project Team
Final design process sign-off			
• Compliance to full brief • Analysis of any change controls required during final design phase, and establish additional costs	Approx 1 year post FC	Structured Questionnaire On completion of design process	• Project Board
Final handover of building			
• Compliance to full project brief • Compliance to health and safety • Compliance to fire regulations • Compliance to clinical clean requirements	Within 6 months of completion of build programme		• Independent Advisor
Completion of Commissioning			
• Compliance to health and safety • Compliance to fire regulations • Compliance to infection control standards • Clinical and operational risk management outcomes • Identify costs, including delays, change controls, and any unforeseen expenditure • Record overall progress against timetable • Complete patient satisfaction survey • Complete staff satisfaction survey	Within 6 months after commissioning		• Independent Advisor • Director of Quality Assurance (Two)
Final Contract Review			
• Full life-cycle financial outcomes • Non-financial benefits • Risk management • Building maintenance conditions • Costs to maintain building beyond contract to 60 year life • Consort performance • Service provider's performance • Contract management results	18 months from opening of new facility	Full Report	• Board of Directors/Trust Board

Table 19-3: Methodology for Evaluating the Construction and Commissioning Stage			
Attribute to be Evaluated	**Timing**	**Method of evaluation**	**Evaluators**
• Staff satisfaction • Patient satisfaction • Purchasers satisfaction			

Table 19-4: Methodology for Evaluating the Operational Stage			
Attribute to be Evaluated	**Timing**	**Method of evaluation**	**Evaluators**
Staff Transfer Review			
• Assess against objectives of Trust's handover programme • Assess against objective of Consort's mobilisation programme • Identify costs	Within 6 months from commissioning	Internal review	• Project Director • Director of Human Resources (Two)
Financial Audits			
• Progress against annual predictions • Trust's finances remain in balance • Achievement of Trust's identified savings	Annual	Rolling programme financial reviews of benefit achievements	• Director of Finance (Two)
Risks Reviews			
• Costs attributable to any identified and unidentified risks occurring • Analysis of risks identified against occurrence (see Risk Analysis for details) • Analysis of unidentified risks against occurrence	Annual	Rolling programme of reviews of risk management strategy	• Contract Manager
Non-Financial Benefits Reviews			
• Analysis of benefits measurement achievements against targets (see Benefits Realisation Plan for details) • Identify any unforeseen benefits achieved • Complete patient satisfaction surveys • Complete staff satisfaction surveys • Analyse staff attrition rates	Annual	Rolling programme of reviews on benefits achieved against plan	• Board of Directors/Trust Board
FM Service Performance Reviews			
• Part of monthly service contract monitoring reviews	Monthly	Reviews to ensure service performance against payment streams	• Contract Manager
On-Going Building Maintenance Lifecycle Costs			
• Monitor annual operating costs against predicted lifecycle costs • Identify maintenance or service costs not within the contract are value for money	Annual	Financial cost maintenance analysis	• Contract Manager
Review of Operational Performance against Plan			
• Activity (Actual v Plan) • Clinical Performance (Actual v Plan) • Capacity and Throughput • Appraisal of new service models	3 years after opening of each new hospital	Full review against FBC projections	• Board of Directors/Trust Board

CONCLUSION

20.1 The Preferred Option

This full business case presents a strong and coherent case for developing new hospital facilities in South Birmingham under the Private Finance Initiative. The scheme for which approval is sought comprises acute and mental health services and has financial and legal arrangements acceptable to the Trusts. The scheme is affordable and represents good value for money. It also builds substantially on the preceding OBC for hospital services, and improves significantly on the PSC.

The following facilities will be provided:

20.1.1 New Acute Hospital

The scheme will deliver the completion of a modern, state of the art acute hospital including inpatient and outpatient services, diagnostics, critical care, accident and emergency, therapies and clinical support. The new facilities will incorporate:

- Capacity for 1231 beds (with over 100 critical care beds, more than 100 dedicated ambulatory care beds and a patient hotel);
- 30 operating theatres;
- 40 imaging rooms; and
- Clinical space for half a million outpatients each year.

The new hospital will significantly improve quality by bringing all hospital services on the two current sites together into modern, purpose-built accommodation which will facilitate the implementation of new service models designed to deliver a more patient focused and efficient approach.

20.1.2 Mental Health Facilities

The mental health component of the scheme proposes two locality based adult units at Showell Green Lane in East Birmingham and on the Queen Elizabeth Medical Centre campus in South Birmingham. The Queen Elizabeth campus will also include a separate specialties unit for eating disorders and post natal depression and will form the main entrance to the site.

In addition, an older persons unit will be developed at Moseley Hall Hospital.

The mental health scheme is part of a pan-Birmingham model of care which will also see significant outreach service developments in the community.

20.1.3 Non-Clinical Services

Non-clinical services that will be provided over the life of the contract comprise:

- Hard facilities management services (including lifecycle requirement) for the new development;
- Provision, maintenance and replacement of Class A and A* equipment, and the provision and maintenance of Class B equipment;
- Information communications infrastructure.

The Trusts will make alternative arrangements to provide all "soft FM" services and equipment not included in the scheme.

20.2 Preferred Provider

The preferred provider for the scheme is Consort which was selected after a rigorous evaluation exercise that included the health community and members of staff and the public. Consort was selected because it presented an affordable scheme with a significantly better design than competing bids and the public sector comparator, which passed the necessary value for money tests. Consort has consistently shown willingness and enthusiasm in meeting the Trust's requirements in terms of the design, operation and commercial arrangements of the development.

20.3 Legal and Financial Issues

The scheme will result in a unitary charge of £47.57 million per annum (Acute £42.34m, Mental Health £5.23m), over the concession period of 40 years (35 years operation and 5 years construction). The construction phase will last 5 years from financial close which occurred in June 2006. The new mental health facilities will be ready in 2008. Services in the new acute hospital will commence in 2010 with full completion of works on the retained estate due in 2012. The PFU's standard form (3) of contract has been followed, suitably amended to reflect the site specific aspects of the scheme. Consort will accept significant risk transferred from the public sector and the asset will not be accounted for on the Trust's balance sheet.

20.4 Project Management

There is a set timetable for the delivery of fully operational facilities by the end of 2012. Arrangements have been put in place to manage the project beyond financial close. These include risk management and contingency strategies together with plans to realise the benefits offered by the new facility.

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