

Sandwell and West Birmingham Hospitals NHS Trust
Midland Metropolitan Hospital Project
Outline Business Case

Appendix 6a Economic Case from OBC Approved in August 2009

Sandwell and West Birmingham Hospitals NHS Trust

Midland Metropolitan Hospital Project

Economic Appraisal Undertaken for the OBC Approved in August 2009

28 February 2014

Sandwell and West Birmingham Hospitals NHS Trust
Midland Metropolitan Hospital Project
Economic Appraisal Undertaken for the OBC Approved in August 2009

DOCUMENT CONTROL SHEET

VERSION	DATE	COMMENTS
1.0	28/02/2014	Chapters extracted from OBC Approved in August 2009 by A Graham

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1 Introduction

- 1.1.1 The two chapters presented in this document come from Version 2.00 of the OBC which was approved by the Department of Health in August 2009. This approval led to the acquisition of the land at Grove lane through an NHS Compulsory Purchase Order. The Trust now owns this land and has secured vacant possession.
- 1.1.2 The economic case has been updated in Version 4.6 of the OBC which seeks approval for procurement of the Midland Metropolitan Hospital through the PF2 approach..

2 Development of Options

2.1 Long List

- 2.1.1 The range of potential options available to the Trust for the future delivery of acute services is considerable, but the options that need to be considered by the Trust are reduced by the decisions of the commissioners as part of the overall models of care envisaged within the RCRH Programme. The service models have discounted the option of not having a local acute hospital and referring all secondary and tertiary care work to other adjacent providers;
- 2.1.2 The scale of acute facilities required within the area is determined by the level of devolution planned to community and primary care. Given this, the Trust considered 6 potential Options at the long-listing stage:
- Do nothing;
 - Do minimum;
 - New build / refurbish City Hospital;
 - New build / refurbish Sandwell General Hospital;
 - Redevelop both City Hospital and Sandwell General Hospital Sites; and
 - New build on a brownfield site.

Discounted Options

- 2.1.3 Initial consideration of the above options discounted the following as not being viable:

Do Nothing

- 2.1.4 An option to “do nothing”, i.e. maintain the status quo was considered and discounted on the grounds that it does not meet the requirements of the RCRH Programme capacity requirements and is not able to deliver the appropriate models of care. In addition to this, it will not address the backlog maintenance issues associated with the existing estate and does not ensure compliance with statutory standards regarding buildings.

Redevelop both City Hospital and Sandwell General Hospital Sites

- 2.1.5 This option could be delivered in 2 different ways:

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- Redeveloping the existing City Hospital and Sandwell General Hospital sites, without changing the existing service configuration was discounted on the grounds that there is a lack of critical mass to sustain services, particularly with the transfer of services to a community setting under the RCRH Programme, and therefore the option is clinically unsustainable.
- The Option of redeveloping both of the existing City Hospital and Sandwell General Hospital sites was considered to be similar to the Do Minimum Option in terms of the clinical services once completed, but more costly in capital cost terms as it does not focus on retention and refurbishment of the existing estate. It would also involve more disruption and significantly longer timescales than the Do Minimum Option to implement. It was on these grounds that this option was discounted.

2.2 Shortlisted Options

2.2.1 Based on the above consideration, 4 options were shortlisted for detailed development and evaluation, as follows:

Option 1 – Do Minimum

2.2.2 Under this option, both City Hospital and Sandwell General Hospital sites would remain operational. Clinical service configuration would change across the sites changing to ensure sustainability, with non-clinical accommodation remaining unchanged. Sandwell General Hospital would act as the main emergency site, and comprise A&E, medical and surgical emergencies, the main Critical Care Unit and Women's & Children's services. In turn, City Hospital would effectively become an elective site, focussing on medical and surgical planned care, with day surgery and some outpatients.

2.2.3 This disposition of services between the 2 sites would require the minimum capital investment to meet RCRH Programme capacity requirements, whilst minimising risk, and ensuring compliance with statutory standards. It was agreed that this option would be retained for evaluation purposes, and to be used as a benchmark from which to measure the other options to be considered as part of the options appraisal work.

Option 2 – New Build / Refurbish City Hospital Site

2.2.4 The proposal for option 2 incorporates a new 8-storey build adjacent to the BTC (which would be retained in line with the devolved model of care agreed with the PCTs). The Emergency Services Centre at Sandwell General Hospital would remain available for other uses, for example, a Community facility. All other buildings at both the City Hospital and Sandwell General Hospital sites would be demolished. The new development would be undertaken in multiple phases, over a 60-month period. The remaining land on the City and Sandwell Hospital sites not required for NHS purposes will be disposed of for commercial redevelopment.

Option 3 – New Build / Refurbish Sandwell General Hospital Site

2.2.5 Under this option, a new 8-storey building is proposed, fronting Hallam Street. The BTC on the City Hospital site would be retained, with the Emergency Services Centre on the Sandwell General Hospital retained for other purposes, for example, a Community facility. As with option 2, all other buildings on both sites would be demolished. The new development would be undertaken in multiple phases over a 72-month period. The remaining land on the City and Sandwell Hospital sites not required for NHS purposes will be disposed of for commercial redevelopment.

Option 4 – New Build on Grove Lane Site

- 2.2.6 The option to develop an 8-storey building on the Grove Lane site, involves a 36-month, single phase construction period. As with options 2 and 3, the BTC would be retained on the City Hospital site, and the Emergency Services Centre at Sandwell would be available for alternative healthcare purposes.
- 2.2.7 Further details on the way in which each of the above options would be delivered and the related site plans are included in the Estates Annex.

2.3 Site Selection Process

- 2.3.1 In 2005, the RCRH Programme commissioned a piece of work to assist in the site selection process for a new acute hospital and three new community facilities to serve the Sandwell and heart of Birmingham area. Section 1.3 and 4.2 of the Land Acquisition Business Case (available as an annex to this document) sets out the detail of how the Grove Lane Area was selected; this section outlines the process.
- 2.3.2 The process involved in selecting the acute hospital site followed a robust analysis involving:
- Site selection from a long list of 18 options following an evaluation of these sites;
 - Selection of a shortlist of 4 sites followed by further analysis/evaluation; and
 - Identification of the Smethwick area as the preferred location focussing initially on the Windmill Eye site and subsequently, following detailed review with SMBC, reaching agreement to progress the scheme at Grove Lane.
- 2.3.3 The initial site search work focussed on identifying a suitable site for the main acute facility, given the scale as known in broad terms at the time, and the critical importance of its location in relation to achieving effective accessibility.
- 2.3.4 A total of 18 sites were identified through research and discussions with representatives from:
- The two local planning authorities (Birmingham and Sandwell);
 - The Sandwell Regeneration Company (RegenCo);
 - South Black Country and Birmingham Regeneration Zone; and
 - Black Country Investment and Black Country Consortium.
- 2.3.5 The vast majority of sites were located in the area between the existing City Hospital and Sandwell General Hospital sites.
- 2.3.6 Discussions with all third parties involved resulted in the acceptance that there was no single site within the catchment area suitable and immediately available to accommodate a new acute hospital. Therefore, with the exception of the two existing sites within NHS ownership (i.e. City Hospital and Sandwell General Hospital) land assembly would be a key issue and would impact heavily on the delivery programme. It was also clear that the NHS sites themselves had particular problems in accommodating a new hospital due to difficulties over phasing and disturbance to existing operational activities.
- 2.3.7 The long list of sites was then evaluated against a set of agreed and appropriately weighted criteria to reduce the number of sites to a manageable short list of core options. A two stage process was

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undertaken to reduce the longlist to a shortlist of 4. The initial 'sieve' of the long list of identified sites was assessed against four 'core' factors:

- Size of site;
- Location and accessibility;
- Deliverability; and
- Regeneration impact.

2.3.8 As a result of this evaluation, four sites were identified as preferred:

- City Hospital, Birmingham;
- Windmill Eye, Smethwick;
- Lyng Industrial Estate, West Bromwich; and
- South of Birmingham Road (A41) Junction 1 M5.

2.3.9 Grove Lane was ranked 5th within the original longlist, and only excluded from the shortlist given its proximity to Windmill Eye.

2.3.10 The four shortlisted sites were then further assessed by technical specialists against a number of detailed criteria, as a result of which, it was agreed at the RCRH Partnership Board Meeting on 22nd August 2005 that the new acute facility should be located in the Windmill Eye area of Smethwick. It was upon this basis that formal consultation was undertaken, for the new acute hospital to be located in the Smethwick area.

2.3.11 Further work was then undertaken in conjunction with SMBC officers to determine the most appropriate site within the area. This evaluation initially identified a preference for development at Windmill Eye, an area identified for change in the Smethwick Area Framework.

2.3.12 A large part of the Windmill Eye site falls within the ownership of SMBC and the area had been identified for redevelopment as part of the Smethwick Town Plan and Housing Market Renewal programme. It was evident from the site analysis that the Victoria Park and Cape Hill District Centre were not appropriate for development. This led to a focus on the northern half of the site to accommodate a site of between 11 and 12.5 hectares (based on the forecasts then being made for the scale of facilities required within the acute hospital and the topography and planning conditions of that area).

2.3.13 This sub-area was divided into four parts for further evaluation, the results of which favoured the land adjoining Soho Way and the A4092 (referred to at the time as Option 4). Additional work was commissioned in relation to the potential deliverability of this option. It became apparent that there were practical issues in relation to achieving the relocation of such a large number of households (744 dwellings) which could lengthen the hospital programme timescales and increase project risk to an unacceptable degree.

2.3.14 As a consequence, it was agreed with SMBC that as an alternative solution the immediately adjacent Grove Lane industrial area should be considered, consistent with the original evaluation. A re-appraisal of the detailed evaluation against the same criteria and based upon the further information then available demonstrated that it was clearly preferred against the other options considered within the shortlist as set out in Table 1 below:

Table 1: Updated Site Appraisal

	City Hospital	Lyng Estate	Junction 1 M5	Grove Lane
Non-Financial Weighted Benefit Score	513	527	536	669
Rank	4	3	2	1
Difference (%)	24.4%	21.2%	19.8%	-

3 Evaluation of Options

3.1 Status of this Section

3.1.1 In examining whether to reconfirm the scheme in 2013 the Trust Board has discussed, in 2 workshop settings, whether the original option appraisal in 2009 remains valid. In doing that specific consideration has been given to:

- The changed financial circumstances for public services notwithstanding the strong performance of the Trust in recent years;
- Revised population expectations including changes in the migrant patterns of the area;
- Enhanced expectations of care integration with local GP practices; and
- Considerably revised expectations of critical mass of acute care service infrastructure.

3.1.2 The Trust has concluded that the case for change remains overwhelming and that only a new build acute hospital can deliver change at the pace required. In addition the Trust has reviewed the original option appraisal to assess whether Grove Lane continues to be preferred option - This update is presented in Chapter 6 of Version 4.6 of the OBC.

3.1.3 The updated capital costs of option 4 (the preferred solution) have not been presented in this document, but are detailed in Section 8 of Version 4.6 to show change in capital costs since the OBC was approved at version 2 in 2009.

3.2 Economic Appraisal Including Financial Valuation of the Benefits

3.2.1 During DH review of OBC Version 4.4 HM Treasury adjusted the standards required for approval to include a financial valuation of the benefits within the economic appraisal. An updated economic appraisal of the preferred solution and the 'do minimum' was therefore undertaken, in line with new guidance, using a 'do nothing' scenario as a baseline position. This work strongly supported the preferred solution: New Build on Grove Lane.

3.3 Public Consultation Exercise

3.3.1 Public consultation on the RCRH proposals took place from 20th November 2006 until 16th February 2007. This was undertaken in accordance with Section 11 of the Health and Social Care Act 2001 (which has recently been updated with Section 242 from April 2008), The consultation centred on changes to health and social care provision in Sandwell and western Birmingham, including the building of a new acute hospital in Smethwick. Meetings with staff and community groups continued until 17th March 2007 and responses received up to this date were included in the analysis.

Pre-Consultation

3.3.2 Prior to formal consultation, a large number of informal pre-consultation events took place. These included:

- Meetings with interested groups;
- Briefing sessions for MPs and Councillors;
- Briefing of the Joint Overview and Scrutiny Committee;
- Briefing of the three Patient and Public Involvement (PPI) Forums (acute Trust and two PCT Forums); and
- Staff briefings via team brief, newsletters, email, payslip attachment and informal meetings.

Formal Consultation

3.3.3 Consultation documents, summaries and easy read versions were produced and material could be requested in other languages, large print, Braille and audio. The responses and notes from public and staff were analysed by an independent research organisation, Quad.

3.3.4 1,800 individuals, organisations and groups, including MPs, councillors, schools, universities, libraries, places of worship, patient support groups, community groups, GP surgeries and options were written to and offered meetings. Consultation was carried out by the Trust, HoBtPCT and SPCT, with Executive and Non-Executive Directors attending meetings supported by members of the organisations communications and PPI teams.

Consultation Activities

3.3.5 Consultation activities included:

- More than 200 meetings attended over the consultation period;
- Engagement with groups that had traditionally been difficult to engage with;
- Participation in public debates held by the Birmingham Mail and BBC Radio WM;
- Focus groups;
- Regular press briefings, press releases and interviews;
- Advertorial on the consultation, including response form were printed in local free press – 98,000 circulation in Sandwell, 243,000 circulation in Birmingham;
- Staff engagement through internal communications mechanisms;
- Engagement with local authority and mental health staff; and
- Monthly stakeholder update.

The Outcome of Consultation

3.3.6 The consultation was analysed by Quad Research at the University of Warwick. The consultation documents and full report by Quad is presented in **Appendix 2c** of OBC Version 4.6.

3.3.7 The outcomes of the consultation are summarised below:

- 601 single responses to the consultation;
- Nearly 2,000 people known to have attended public meetings;
- 323 participants in a series of focus groups;
- 23 group responses;
- Formal responses from key stakeholders;
- Two petitions;
- 73% in support of proposals; and
- Plans for ongoing consultation and involvement developed.

3.3.8 A report on the Public Consultation was considered by the RCRH Agency Board on 26th March 2007, and it was unanimously agreed that the preferred way forward was to develop a new acute hospital in the Smethwick area as a key component of the overall changes in healthcare provision in the local health communities.

3.4 Non-Financial Appraisal

3.4.1 In April 2007, the Trust undertook a formal non-financial appraisal exercise, involving all key stakeholders, evaluating the 4 options upon which the OBC is based, as they stood at that time. 23 stakeholders took part in the evaluation, representing the Trust, SPCT, HoB tPCT, local Patient Forums, BCC, SMBC and local Voluntary Groups. The evaluation involved a wide range of key stakeholders, and followed a standard approach to non-financial appraisals, i.e.:

- Stage 1 : Criteria selection;
- Stage 2 : Weighting of criteria to reflect their relative importance;
- Stage 3 : Consideration of the options and scoring against the agreed criteria; and
- Stage 4 : Analysis of the results and sensitivity testing to establish the robustness of the conclusions.

3.4.2 The results of the appraisal exercise showed a clear preference from those involved in the process for Option 4. Subsequently, and to ensure that the evaluation process was as robust as possible, the original non-financial appraisal work was revisited in February 2008. The Trust invited senior clinical and management staff to look at the following areas:

- The criteria against which the options were scored;
- The weightings for the criteria; and
- The scores.

The Options

3.4.3 In revisiting the appraisal work, it was agreed that the re-evaluation would take place against the options as they stood at that time (i.e. February 2008), not as they were when the original evaluation exercise took place (April 2007). This would ensure that the scoring took into account the detailed design development work that had been undertaken to help further refine the options and how the services will be delivered under each of them. Therefore, at a high level the options remained the same as previously, i.e.:

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- Option 1 – Do Minimum;
- Option 2 – New Build / Refurbish on City Hospital Site;
- Option 3 – New Build / Refurbish at Sandwell General Hospital Site; and
- Option 4 – New Build on Grove Lane.

3.4.4 However, since the original work, Option 1 had been developed and described as having a “hot” (i.e. emergency) site on the current SGH site and a “cold” (i.e. elective) site on the City Hospital site. It was agreed therefore that for the purposes of the appraisal exercise, a variant of this based on the reverse of the proposal would also be scored, to see what difference if any, this may have on the scoring. Therefore Option 1 was scored against the following scenarios:

- Option 1A – emergency services located at SGH / elective services at City Hospital; and
- Option 1B – emergency services located at City Hospital / elective services at SGH.

Evaluation Criteria

3.4.5 The evaluation criteria previously used had been based on that used within the overall RCRH Programme and as outlined in its SOC as the basis upon which evaluations would be evaluated. The Trust therefore agreed to the continued use of these criteria, i.e.

- Better access to services;
- Improved clinical quality of services;
- Improved environmental quality;
- Developing existing services and/or providing new services;
- Improved strategic fit of services including regeneration;
- Meeting national, regional and local policy imperatives;
- Meeting teaching, training and research needs;
- Making more effective use of resources; and
- Ease of delivery.

Weightings

3.4.6 A review of the previously agreed weights acknowledged that although the weighting of 9% for “Ease of Delivery” appeared low, aspects of this criterion would also be inherent in the scoring of other criteria (for example the Clinical Quality and Environmental Quality of the various options would be impacted during the transition phase by the nature of the works proposed). It was therefore concluded that the weighting of 9% was valid. On this basis, it was agreed to use the same weightings as those previously used, and as follows in Table 2 below.

Table 2: Criteria and Weights - Non Financial Appraisal Update

Criteria	Weightings	Rank
Better access to services	15%	2
Improved clinical quality of services	18%	1

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Improved environmental quality	11%	4
Developing existing services and/or providing new services	9%	=6
Improved strategic fit of services including regeneration	9%	=6
Meeting national, regional and local policy imperatives	6%	9
Meeting teaching, training and research needs	10%	5
Making more effective use of resources	14%	3
Ease of delivery	9%	=6

The Scores

3.4.7 Having agreed the criteria and weighting would be as previously used, the updated options were scored on a group basis, with raw scores allocated between 1-100 against each of the criteria. The detailed scores are available on request and can be summarised as follows:

Table 3: Overall Results - Non-Financial Appraisal Update

	Option 1 – Do Minimum 1A – SGH Hot / CH Cold 1B – CH Hot / SGH Cold		Option 2 – Build / Refurb. City Hospital	Option 2 – Build / Refurb. SGH	Option 4 – New Build Grove Lane
	1A	1B			
Raw Score	455	460	700	665	760
Weighted Score	51.1	51.75	76.93	72.59	84.3
Rank	=4	=4	2	3	1
% Difference	-39%	-39%	-9%	-14%	-

3.4.8 The above shows that Option 4 – New Build on Grove Lane remained the significantly preferred option with a weighted score of 84.3, with Option 2 – City Hospital behind by 9% on 76.93, Option 3 marginally behind with 72.59, and Option 1 (both 1A and 1B) a clear fourth with scores of 51.1 / 51.75 respectively.

3.4.9 Sensitivity tests were also undertaken to examine whether changes to the weightings applied to the criteria could result in changes to the preferences. This showed that although the absolute scores would change, the ranking and relative differences between the options remained unchanged.

3.4.10 On the above basis, the update to the original non-financial appraisal work again identified Option 4 as being the preferred option over Options 2, 3 and 1 in that order. A full report outlining a more detailed description of the process, scores and analysis, including an explanation for the differentials in scoring is available on request.

3.5 Financial Appraisal

3.5.1 A full financial appraisal of the short-listed options has been undertaken to assess their revenue cost impact and to identify which option represents the best value for money (VfM). Details of the analysis is available on request.

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Methodology and Key Assumptions

3.5.2 The Trust has established a comprehensive financial modelling tool to ensure that the integrity of links to the Trust's existing financial plan and budgets for 2008/09 and to its Long Term Financial Model (LTFM) are maintained and reflected in all options.

3.5.3 The appraisal has encompassed the following elements:

- Assess the capital cost impact of each option;
- Identify baseline revenue budgets;
- Assess the revenue cost impact of the activity and capacity model forecasts under each of the options;
- Estimate the on-going capital lifecycle cost implications;
- Consolidate all cost components into an economic appraisal of each of the options;
- Consider the economic impact of risk;
- Identify the option that represents the best value for money; and
- Carry out sensitivity testing to assess the robustness of the preferred option, economically.

3.5.4 The price base used throughout the financial appraisal is 2008/09.

Capital Costs

3.5.5 The capital costs of the options have been assessed by the Trust's capital cost consultants, using a base MIPS index of 515 Variation of Price (VOP) index for approval purposes, based upon NHS Estates Quarterly Briefing Vol 17.1. Outturn costs reflect a start on site in Q2 2012 and a MIPS index of 638 VOP, with inflation from that point assessed on the basis of movements in the Price Adjustment Formula for Building and Specialist Engineering Works to a Public Sector Average Building (APSAB) index. The outturn costs have then been discounted back to current 2008/09 prices using the Gross Domestic Product (GDP) deflator of 2.5% per annum.

3.5.6 The resulting capital costs are summarised below.

Table 4: Summary of Capital Costs for Options

Capital Costs	Option 1 Do Minimum £000	Option 2 City Site £000	Option 3 SGH Site £000	Option 4 Grove Lane £000
At MIPS 515:				
Departmental costs	94,926	124,428	124,428	124,428
On-costs	41,555	109,708	108,635	109,169
(Location adjustment)	(9,554)	(16,390)	(16,314)	(16,352)
Sub-Total Works costs	126,927	217,746	216,749	217,245
Fees	19,039	27,218	27,094	27,155
Equipment	3,511	3,511	3,511	3,511
Non Works	580	17,339	29,591	5,371

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Capital Costs	Option 1 Do Minimum £000	Option 2 City Site £000	Option 3 SGH Site £000	Option 4 Grove Lane £000
Land Acquisition	0	0	0	19,739
Planning Contingencies	9,003	15,949	16,617	15,197
Value Added Tax (VAT)	19,443	44,260	46,347	44,154
Optimism Bias	35,308	50,469	52,618	44,717
Total Capital Cost at MIPS 515	213,811	376,492	392,527	377,089
Total Capital Cost at Outturn	286,171	494,342	526,150	483,983
Total Capital Cost at "Current"	247,690	435,147	455,157	431,985
Capital Costs (Net of Land Sales):				
At MIPS 515	209,812	353,014	370,666	347,729
At Outturn	282,171	470,864	504,290	454,623
At "Current"	243,690	411,669	433,297	402,625

3.5.7 Capital cost estimates incorporate:

- NHS Estates Quarterly Briefing Volume 17.1;
- Departmental costs at the same level for the "development" Options 2, 3 and 4, based on a sign brief area of 87,123m²;
- Departmental costs for Option 1 based on over 50% of the works being refurbishment in nature;
- On-costs at:
 - 43.78% Option 1;
 - 88.17% Option 2;
 - 87.31% Option 3; and
 - 87.74% Option 4;
- Professional Fees at 12.5% for Options 2, 3 and 4 and 15% for Option 1;
- A 6% provision for planning contingencies under all options;
- Optimism Bias, reflecting the different site constraints, construction periods and refurbishment elements, but net of a mitigation factor of 43% (for all options) at:
 - 19.78% Option 1;
 - 15.48% Option 2;
 - 15.48% Option 3; and
 - 14.41% Option 4;
- Land Acquisition costs only apply to Option 4 and reflect the figure included within the separate Land Business Case;
- VAT is included at a rate of 17.5% for all elements with the exception of:
 - Professional Fees, which are zero rated;
 - Land Acquisition (Option 4 only), where some elements of cost are zero-rated, and thus the VAT chargeable is equivalent to a rate of 11.18%; and

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- Option 1, under which elements of capital spend would qualify for VAT recovery and have been costed accordingly at a net VAT rate equivalent to 14%.

Revenue Costs

Approach and Methodology

- 3.5.8 The Trust has developed activity and financial models in partnership with local PCTs to assess in detail a view of future activity projections across the local health economy. To support the activity modelling the Trust has developed a bespoke Income and Cost Model which takes the Trust's current Financial Plan for 2008/09 and predicts the annual financial consequences of the service changes outlined above by department. This therefore provides the core cost assessment for comparison to an income judgment derived directly from the activity modelling.
- 3.5.9 The Income and Cost Model assesses separately the financial impact of those services which will be based within the acute hospital in the future, and those services which will be provided by the Trust in alternative community-based settings. The approach and methodology used within the Trust's model is considered in more detail below.

Acute Hospital Services

- 3.5.10 The expenditure modelling has been based on the following approach:
- An analysis of the Trust's existing costs based on the Trust's existing budgets within its financial plan for 2008/09, including a full subjective analysis;
 - The identification of the key determinants of the future levels of cost (Cost Drivers). For clinical and clinical support costs, cost drivers have been based on future levels of patient activity, including:
 - Admitted Patient Care episodes (Medical, Surgical, Maternity, Paediatrics);
 - Outpatient Attendances;
 - OBDs;
 - Theatre Minutes;
 - Numbers of Scans and Tests;
- 3.5.11 These have been supplemented by cost drivers associated with the revised building space, which have been used as the basis for Facilities Management (FM) cost projections;
- The application of a Variability Factor to each cost heading to reflect the extent to which each cost is expected to vary in line with changes in its identified key cost driver;
 - An assessment of the capital charges on both the capital investment and on the retained assets under each option.
- 3.5.12 The resultant revenue cost projections have been subject to extensive review within the Trust and with the two local PCTs, supplemented by detailed bottom-up cost assessments undertaken with service managers for key departments/budgets, including:
- Medical Staffing;
 - Nurse Staffing;
 - Pathology;

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- Imaging;
- Critical Care;
- A & E;
- Therapies; and
- FM Services.

3.5.13 As a result of these reviews, the initial cost projections were increased by £3m to take into account the more detailed assessments of the likely future requirements.

3.5.14 A detailed analysis of the forecast recurring revenue costs for the acute hospital related services in 2017/18 under each option is shown in Table 5 below.

Table 5: Summary of Revenue Costs for Options

Revenue Costs	Option 1 Do Minimum £000	Option 2 City Site £000	Option 3 SGH Site £000	Option 4 Grove Lane £000
Baseline Costs 2008/09:				
Clinical Services	222,650	222,650	222,650	222,650
Non-Clinical Services	49,459	49,459	49,459	49,459
FM Services	30,224	30,224	30,224	30,224
Other Support Services	16,006	16,006	16,006	16,006
Capital Charges	25,601	25,601	25,601	25,601
Gross Baseline Costs	343,940	343,940	343,940	343,940
Forecast Recurrent Costs 2017/18				
Clinical Services	174,598	168,392	168,392	168,392
Non-Clinical Services	36,913	34,913	34,913	34,913
FM Services	19,767	18,512	18,512	18,512
Other Support Services	1,764	1,764	1,764	1,764
Capital Charges	31,618	39,498	40,411	37,823
Gross Forecast Costs	264,659	263,079	263,992	261,404
Revenue Cost Change				
Clinical Services	(48,052)	(54,258)	(54,258)	(54,258)
Non-Clinical Services	(12,546)	(14,546)	(14,546)	(14,546)
FM Services	(10,457)	(11,712)	(11,712)	(11,712)
Other Support Services	(14,242)	(14,242)	(14,242)	(14,242)
Capital Charges	6,017	13,897	14,810	12,222
Gross Cost Change	(79,281)	(80,861)	(79,948)	(82,536)
Option Differential	+3,255	+1,675	+2,588	-

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Revenue Costs	Option 1 Do Minimum £000	Option 2 City Site £000	Option 3 SGH Site £000	Option 4 Grove Lane £000
Rank	4	2	3	1

3.5.15 The financial analysis confirms that Option 4 has the lowest recurring annual revenue cost, and has a cost which is £1.675m lower than Option 2.

Services to be Provided by the Trust in Community Settings

3.5.16 An assessment has also been made of the costs associated with those services which are likely to be provided by the Trust outside of the new acute hospital. This assessment has been based upon a combination of:

- The Trust's current costs of delivering those services; and
- Cost estimates prepared by the local PCTs.

3.5.17 The financial impact of these services will be the same under all of the options and have not been included within the financial and economic analysis for the acute hospital. The income and expenditure associated with these services have, however, been factored into the overall affordability of the project.

Economic Analysis

3.5.18 All four short-listed options have been fully evaluated in line with the requirements of the NHS Capital Investment Manual and the HM Treasury (HMT) Green Book in order to determine which option is likely to represent the best value for money over the full operational life of the facilities.

3.5.19 A soft copy of the Generic Economic Model (GEM) is available separately. Details of the economic analysis are available on request.

3.5.20 Key parameters underpinning the economic analysis are:

- A full 60-year period of new operations is reflected. Since the new facilities under Option 4 are deliverable within a shorter period, the full appraisal for Option 4 covers 67 years, compared to 69 years for Options 1, 2 and 3;
- An alternative period appraisal has also been undertaken to assess the economic impact over a 30-year period of new operations;
- The discount rate for years 0 to 30 is 3.5%, and 3% for subsequent years;
- VAT is excluded from all cash flows; and
- The price base (and Year zero) is 2008/09.

3.5.21 The source of the cash flows for the various cost elements of each option is described below.

Capital Costs

3.5.22 Capital cash flows in respect of new and refurbishment works reflect costs at "current" levels, derived by discounting annual outturn cash flows by a 2.5% GDP deflator. They include Optimism Bias, but

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contingencies are excluded. For Option 4, land acquisition costs of £14.689m (exclusive of VAT and compensation costs) are also included within capital cash flows.

Land Sale Receipts

3.5.23 Land sales receipt estimates reflect site valuations and assessments undertaken by the Trust's advisers in October 2007, in respect of the current City and Sandwell hospital sites, and assume a mainly residential use. The proportions of each of the current sites available for disposal under each of the options, together with an estimate of the net land sale proceeds, are set out in Table 6 below:

Table 6: Estimated Net Land Sales Receipts

Net Land Sale Receipts	Option 1 Do Minimum	Option 2 City Site	Option 3 SGH Site	Option 4 Grove Lane
% City Land Sold	18.3%	73.1%	100.0%	100%
% Sandwell Land Sold	0.0%	100.0%	0.0%	100%
Net Land Sale Proceeds (£m)	(£4.0m)	(£23.478m)	(£21.860m)	(£29.360m)

Opportunity Costs

3.5.24 Opportunity Costs have been included, based on the existing book value of the land on the City and Sandwell sites, at £29.360m for all options.

Residual Values

3.5.25 Three elements of potential residual value have been assessed:

- Land – based on estimated open market values for alternative use applied to the estimated area of each site retained;
- Retained Estate – only applicable for Option 1 and calculated with reference to the current value, remaining life and consequent potential lifecycle replacement cycle, for each of the main blocks on the City and Sandwell sites; and
- Value of new facilities constructed – derived from the initial capital cost of works and fees elements, adjusted for annual lifecycle spends and implied depreciation. (This element has only been included in the Alternative appraisal, since new assets are assumed to be fully utilised after 60 years of operation).

3.5.26 The residual values for the Full and Alternative appraisal periods are set out in Table 7 and Table 8 below:

Table 7: Estimated Residual Values - Full Period

Residual Value Appraisal Period 69 Years Options 1 to 3 and 67 Years Option 4	Option 1 Do Minimum £m	Option 2 City Site £m	Option 3 SGH Site £m	Option 4 Grove Lane £m
Land Value	(38,240)	(12,080)	(14,190)	(9,950)

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Retained Estate	(54,515)	0	0	0
New Facilities	0	0	0	0
Total Residual Value	(92,755)	(12,080)	(14,190)	(9,950)

Table 8: Estimated Residual Values - Alternative Period

Residual Value Appraisal Period 39 Years Options 1 to 3 and 37 Years Option 4	Option 1 Do Minimum £m	Option 2 City Site £m	Option 3 SGH Site £m	Option 4 Grove Lane £m
Land Value	(38,240)	(12,080)	(14,190)	(9,950)
Retained Estate	(116,379)	0	0	0
New Facilities	(132,426)	(218,118)	(217,821)	(215,428)
Total Residual Value	(287,045)	(230,198)	(232,011)	(225,378)

Lifecycle Costs – Building & Engineering

3.5.27 The cost of maintaining the building and engineering assets during the economic appraisal period (reflecting 60 years of “new” functionality for the proposed facilities) has been assessed in conjunction with professional advisers, as follows:

- All figures are at 2008/09 cost levels, exclusive of VAT and no assessment has been made of the impact of future inflation on cost levels;
- The lifecycle cost driver for each option is based on the value of initial new works and fees (including Optimism Bias, but excluding contingencies);
- The assessment is based on standard building and engineering component lives expressed as a proportion of initial works costs;
- Cyclical “refurbishment” is assumed to be some 8.5% more expensive than the initial capital costs, as a result of the likely need to decant (works would be major in nature) and the higher on-costs attributable to refurbishment work; and
- 60% of new build works relate to building fabric, with the remaining 40% relating to engineering plant.

3.5.28 Building asset life proportions are assessed as shown in Table 9 below.

Table 9: Building and Engineering Asset Component Lives

Component Replacement Cycle	Building %	Engineering %
60 Years	75%	38%
30 Years	1%	20%
25 Years	1%	15%
20 Years	15%	13%
15 Years	2%	7%
10 Years	5%	7%

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5 Years	1%	0%
Total	100%	100%

3.5.29 In addition, for Options 2, 3 and 4, an allowance has been included for annual spends on irregular maintenance based on an average cost of £2 per m². Under Option 1, a separate assessment has been made of the lifecycle cost implications of the Retained Estate and this is included within the economic analysis.

Lifecycle Costs - Retained Estate (Option 1 only)

3.5.30 The lifecycle cost implications for the Retained Estate have been estimated for each of the main blocks on both sites on the following basis:

- Establish existing capital value and remaining life;
- Use the existing capital value as the lifecycle cost driver; and
- Apply the “standard” lifecycle profile from 2008/09, but at a start point in the cycle that reflects the remaining life of the block.

Lifecycle Costs – Equipment

3.5.31 The Trust has a well-developed Draft Equipment List which indicates that the overall value of equipment needed for the new hospital is valued at £49.6m, excluding VAT. A detailed replacement cycle has been developed to reflect:

- Type of equipment;
- Asset Life;
- Value of equipment currently in use;
- Value of equipment planned for procurement in advance of the hospital development; and
- Equipment provision within the hospital development costs.

3.5.32 The resultant equipment lifecycle profile has been applied to all options, and in economic terms equates to an Equivalent Annual Cost (EAC) provision of £4.8m.

Revenue Costs

3.5.33 The economic analysis includes the projected annual revenue costs set out in Table 5: Summary of Revenue Costs for Options above. Based on a detailed financial appraisal, costs have also been profiled from the baseline position, to reflect the differential timing of the delivery of the new facilities under each option.

Risk Element of Options

3.5.34 The economic assessment of the four options also includes a consideration and an evaluation of the differential impact of the risks that could arise. This element of the appraisal has been considered in detail within the Land Business Case, with the focus being on the risks surrounding land assembly and land disposal.

3.5.35 Details of the risk analysis are available on request.

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3.5.36 The approach to this analysis is in line with HMT and DH guidance and systematically quantifies the risks through the following stages:

- Identification and agreement of the risks to be appraised;
- Confirmation of the most appropriate driver for each risk;
- Assessment of the potential range of variability for each of the risks; and
- Identification of the probability of the risk emerging.

3.5.37 A standard 3-point probability distribution has been used, assessing the minimum, most likely and maximum risk to quantify the impact. The results are summarised in Table 10 below:

Table 10: Economic Impact of Risk (Full Appraisal Period)

Net Present Cost (NPC) of Risk	Option 1 Do Minimum £m	Option 2 City Site £m	Option 3 SGH Site £m	Option 4 Grove Lane £m
NHS Consultation	6.41	11.33	11.84	0.0
Planning Costs	0.37	2.62	2.19	2.58
Site Acquisition Costs	0.0	0.0	0.0	(0.22)
Site Development Costs	0.07	0.84	0.79	4.15
Sale Valuations	0.05	0.28	0.28	0.35
Land Holding	0.0	0.0	0.0	0.28
Project termination	0.0	0.0	0.0	0.09
Judicial Review	0.29	0.48	0.51	0.68
Total All Risks – NPC	7.19	15.55	15.61	7.91
Total All Risks - EAC	0.26	0.57	0.57	0.29

3.5.38 Having said this, the factors examined within the risk appraisal do consider all those elements that vary between the Options.

Summary of Economic Analysis

3.5.39 A summary of the economic analysis outputs is shown in Table 11 to Table 13 below, which shows a clear overall preference for Option 4.

Table 11: Economic Cost of Options (Excluding Risk)

Economic Impact Appraisal Period 69 Years Options 1 to 3 and 67 Years Option 4	Option 1 Do Minimum £m	Option 2 City Site £m	Option 3 SGH Site £m	Option 4 Grove Lane £m
NPC	6,886.7	6,745.7	6,764.2	6,670.8
EAC	251.3	246.1	246.8	245.5
EAC Variance	+5.8	+0.6	+1.3	-

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Rank	4	2	3	1
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Table 12: Economic Cost of Risk

Economic Impact	Option 1 Do Minimum £m	Option 2 City Site £m	Option 3 SGH Site £m	Option 4 Grove Lane £m
NPC	7.2	15.5	15.6	7.9
EAC	0.3	0.6	0.6	0.3
Rank	1	3	4	2

Table 13: Economic Cost of Options (Including Impact of Risk)

Economic Impact Appraisal Period 69 Years Options 1 to 3 and 67 Years Option 4	Option 1 Do Minimum £m	Option 2 City Site £m	Option 3 SGH Site £m	Option 4 Grove Lane £m
NPC	6,893.9	6,761.2	6,779.8	6,678.7
EAC	251.6	246.7	247.4	245.8
EAC Variance	+5.8	+0.9	+1.6	-
Economic Switch Values	(5.8)	(0.9)	(1.6)	0.9
Rank	4	2	3	1

Summary of Financial Appraisal

3.5.40 In terms of affordability, the financial appraisal indicates that Option 4 has the lowest recurring annual revenue cost. The economic appraisal confirms that Option 4 is the preferred option, by an EAC margin of £0.9m over the 2nd ranked, Option 2.

3.6 Sensitivity Testing

3.6.1 Details of the sensitivity analysis undertaken are available on request, and are summarised below.

Economic Switch Values

3.6.2 The results of the economic appraisal have been subjected to a standard sensitivity test to assess the level of cost change required (independently within 3 key cost areas, and differentially between options), sufficient to trigger switch values and make Option 4 not preferred. This analysis confirms that there are no realistic circumstances under which Options 1 or 3 would be preferred over Option 4.

3.6.3 For Option 2 to be preferred over Option 4, cost increases of the following magnitude would be necessary within Option 4 (or alternatively, broadly corresponding cost reductions in Option 2):

- Additional capital costs of £29m (8%); or
- Additional lifecycle costs of £83m (24%); or
- Additional revenue costs of £0.8m (0.4%).

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3.6.4 It is judged to be very unlikely that capital or lifecycle costs would increase, differentially, sufficient to trigger switch values in favour of Option 2. Although the revenue change needed appears to be relatively small, revenue cost projections are founded on identical assumptions for both options, and it is extremely unlikely that a scenario in which Option 4 costs rose (and Option 2 costs did not) would arise.

Specific Capital Sensitivities

3.6.5 In addition, for Options 4 and 2, specific sensitivities have been run to further test the robustness of the margin in favour of Option 4 if different capital cost assumptions were to be applied to all of the following:

- Land Acquisition – 10% higher (Option 4 only);
- On-costs – 10% higher in Option 4 and 10% lower in Option 2; and

3.6.6 Off-site and S.106 works – 10% higher in Option 4 and 50% lower in Option 2. Table 14 below confirms that even if all these changes were to arise, the net capital impact would be £29m, in line with the base case (capital) headroom of £37m needed to trigger the EAC switch value.

Table 14: Specific Capital Sensitivities - Options 2 and 4

Capital Cost Change	Option 2 Reduction £m	Option 4 Increase £m	Net Change £m
Land Acquisition: 10%	0.0	2.0	2.0
On-Costs: 10%	(13.2)	13.0	26.2
Off-site costs: 10%	(0.4)	0.4	0.8
Total Change	(13.6)	15.4	29.0

3.6.7 The sensitivity testing confirms that Option 4 represents the best value for money of the four options.

3.7 Overall Conclusions

3.7.1 Option 4 is clearly preferred in Non-Financial terms, and also represents the best value for money. As can be seen in Table 15 below combining the impact of both appraisals further confirms the preference for Option 4, as represented by the economic cost per benefit point.

Table 15: Combined VFM and Non-Financial Scores

	Option 1 Do Minimum	Option 2 City Site	Option 3 SGH Site	Option 4 Grove Lane
EAC (£000) Pre-Risk Adjustment	251,287	246,142	246,818	245,516
EAC (£000) Impact of Risk	264	572	574	291
EAC (£000) (Risk Adjusted)	251,551	246,714	247,392	245,807
Weighted Benefit Score	51.75	76.93	72.59	84.30
EAC per Benefit Point (£000)	4,861	3,207	3,408	2,916

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Rank	4	2	3	1
Margin (%)	66.7%	10.0%	16.9%	-

3.7.2 On this basis, Option 4 has a 291-point (10.0%) margin over Option 2 and is confirmed as the PSC.