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

Appendix 6c External Health Benefits

Sandwell and West Birmingham Hospitals NHS Trust

MMH Project

EXTERNAL HEALTH BENEFITS QUANTIFICATION
February 2014

Version 2.3

1. Introduction

The purpose of this paper is to discuss the update to the quantifications of health benefits in support of the update of the Economic Appraisal and Benefits Quantification work for the 2014 MMH OBC update (for DoH and HMT appraisal).

2. Background

In 2011 the Trust undertook an exercise to quantify selected non financial external health benefits for each of the Do Nothing, Do Minimum and Grove Lane options. In February 2014, the Trust convened a workshop to review this analysis.

2.1 Approach

A workshop was held to identify which of the benefits identified in the Benefits Realisation Plan had already been quantified and included within the revenue cash flows in the economic appraisal. It was agreed that these would be excluded to avoid 'double count' of benefits. The excluded benefits are primarily those resulting in internal efficiencies such as reduction in length of stay, reduced capacity etc.

For the remaining health benefits a method of quantification was identified focusing on the benefit to the individuals and the wider economy rather than to the Trust. The exception to this was the reduced level of Did Not Attend (DNA) rates which had not previously been included in the affordability model.

A number of meetings and discussions were then held with the Trust's Medical Director, senior clinicians and the Directors of Public Health to confirm the measures, the level of benefit anticipated between the options and to identify potential sources of evidence. In addition, statistics used in the analysis have been updated where new information was available.

In looking at the level of benefits anticipated the Trust's ability to contribute to the *RCRH Programme* outcomes was also considered. This is because of the strong interdependencies between the wider *RCRH Programme* and the project.

3. Summary of the Service Model Assumptions

The characteristics of the service model are summarised below to show how benefits will be realised for each option.

3.1 The Grove Lane Solution

This results in full delivery of the *RCRH Programme* model of care to achieve the following:

- Consolidation of A&E, all acute inpatients and supporting services on one site
- Greater critical mass of services within larger clinical teams so reducing professional isolation and enabling the delivery of high quality care through greater sub-specialisation
- Robust 24 hour senior cover
- Consequent earlier diagnosis and treatment of emergencies e.g. thrombolysis for stroke
- Patients requiring a more complex assessment before discharge will have it in a more appropriate intermediate care setting (i.e. not an acute hospital) with a team of multidisciplinary staff trained to undertake such assessments

- Increase in day case rates resulting in increase in minimally invasive surgery with a reduction in recovery time.
- Adult day case surgery being undertaken in community locations in the BTC, BMEC and Sandwell and so closer to home
- Full implementation of outpatient care pathways as a result of the Trust being able to release senior clinical time to work with and support primary care in developing and delivering new care pathways
- Improved care pathways will result in fewer patients requiring outpatient appointments (especially follow up appointments) and a greater proportion of those that do require such appointments being able to have these in a location closer to home with required diagnostic tests being available at the same time (one stop approach)

3.2 Do Minimum Solution

The *RCRH Programme* model of care can only be partially implemented as outlined below:

- Development of a 'hot' and 'cold' sites releasing some senior clinical time
- The 'cold' site will still have elective inpatients which will require some onsite 24 hour medical cover which limits resources available to provide senior 24 hour cover on the 'hot' site
- Consequent reduced ability to achieve greater sub-specialisation, 24 hour senior cover and on-going service development
- Retaining Sandwell as a 'hot' site will impact on bed capacity for intermediate care on the Sandwell site
- Reduced ability to deliver improvements to outpatient pathways because it will not be possible for the Trust to release as many medical staff to work with and support primary care in developing and delivering new care pathways

3.3 Do Nothing Solution

It is assumed that the service model for 'Do Nothing' would remain the same as it is now.

4. Assumptions

The assumptions used in developing the benefits quantification fall into those that cut across all benefits and those that apply to individual benefits. The evidence/source for individual benefit assumptions can be found in the detailed spreadsheet in Appendix X.

4.1 Cross Cutting Assumptions

In summary the cross cutting assumptions are:

- Future years activity based on activity levels in the *RCRH* Activity and Capacity Model (version 5.7b)
- Option 1 - Do Minimum build period is 6 years (Do Minimum Option)
- Option 4 – New Build on Grove Lane Site build period is 28 months (Grove lane Option).

4.2 Benefit Description and Modelling Assumptions

The table below summarises the health benefits that have been quantified for this economic appraisal and outlines the sources of data and assumptions used in the analysis.

Benefit	Benefit Description	Source of Data and Assumptions used to Quantify the Benefit
Transport Costs	The majority of patients will have a reduced distance to travel as an outcome of the service model and provision of care closer to home with lower costs to them and reduced time away from work.	2012/13 outpatient activity by site by top 10 post codes of patients attending. 2012/13 day case, A&E, emergency inpatient and elective inpatient activity by site. Travel distances and time to each site from the post codes used, obtained from Google maps. GDP saving based on average GDP per capita per annum and used to derive an hourly GDP rate. Traded carbon value per CO_2e
Unexpected Hospital Mortality Ratios	As a result of consolidation of A&E, all acute inpatients and supporting service on one site there will be a reduction in unexpected deaths in hospital with associated improved life expectancy for these patients. This will generate a human cost saving for society.	Trust Hospital Standardised Mortality Ratio (HSMR) of 92.8 as at October 2013. Trust current average age of death of 74.1 years (from Trust data for 2012/13). Average national life expectancy of 85.15years. Human cost saving based on the difference between the Trust's current average age of death and average national life expectancy (11.05 years) with cost per Quality Adjusted Life Year (QALY) of £30,000 and average UK QALY applied. Future HSMR under Grove Lane solution assumed to improve to 88 (within the national top quartile in 2012/13). Future HSMR under 'Do Minimum' and 'Do Nothing' options assumed to remain as now (within the national upper quartile in 2012/13).
Discharges to Nursing and Residential Care Homes	Enhanced assessment in intermediate care will reduce the number of people discharged from hospital into a long term residential care or nursing home setting. The benefit is that this will result in a lower level of cost associated with caring for these patients in their own homes with community support as opposed to residential care setting.	Numbers of patients discharged from the Trust to a residential care home for the first time (as opposed to discharged back to a residential care home as usual place of residence) in 2012/13. Numbers of patients discharged from the Trust to a nursing care home for the first time (as opposed to discharged back to a residential care home as usual place of residence) in 2012/13. Assumes reduction of 20% in the numbers of patients discharged to a residential care or nursing home for the first time (as opposed to discharged back to a residential care or nursing home as usual place of residence) under Grove Lane solution. The 20% reduction is based on evidence based work undertaken by the Intermediate Care Work Stream within the *RCRH Programme*. Reduction of 10% in the numbers of patients

		discharged to a residential care or nursing home for the first time (as opposed to discharged back to a residential care or nursing home as usual place of residence) under the 'Do Minimum' option as a result of some improvement to the patient pathway Numbers of patients discharged from the Trust to a residential care or nursing home for the first time under 'Do Nothing' assumed to remain as now. Average life expectancy in a residential care or nursing home is assumed to be 30 months based on evidence from Department of Health (2008, '*Making a strategic shift to prevention and early intervention; A guide', page 80).* Cost savings released by caring for a patient in their home with supporting community services compared to caring for a patient in a residential care home assumed to be £4 500 per annum based on evidence from Department of Health (2008, '*Making a strategic shift to prevention and early intervention; A guide', page 85).* Cost saving assumed to be greater when compared to caring for a patient in a nursing home based on greater staffing ratios.
Did Not Attend Rates	The new service model for outpatients (with fewer review attendances and care closer to home) will result in a lower level of patients not attending appointments (DNAs) with an associated increase in income to the Trust from these appointments.	Existing Trust DNA rate for new and follow up appointments using 2012/13 actual data. National average cost per DNA for new and follow up appointments. Assumes reduction in blended (across new and follow up appointments) DNA rate to 6% in line with national upper quartile under Grove Lane solution. Assumes reduction in blended DNA rate to 10.5% under 'Do Minimum' DNA rates under 'Do Nothing' assumed to remain as now (i.e. 13.1%).
Increased Day Case Rates	Increase in day case rates resulting in fewer patients requiring elective inpatient surgery (and associated increased time in hospital and recovery rates). This will result in patients of working age returning to work sooner with an associated reduction in lost GDP.	Use of current (2012/13) day case rate (80%) and percentage of day case patients of working age i.e. between the ages of 18 and 67 years (65.2%). Assumed future day case rate of 86%. Assumes reduction in recovery time for patients undergoing day case surgery of an average of 4 weeks. This will allow patients to return to work 20 days earlier than if they had elective inpatient surgery. GDP saving based on average GDP per capita per annum and used to derive a daily GDP rate.

		Increase in day case rates to 86% with associated reduced recovery time assumed under Grove Lane solution and 'Do Minimum'. The difference between the two options is an assumed earlier implementation date for the Grove Lane solution. Day Case rates under 'Do Nothing' assumed to remain as now (i.e. 80%).
Stroke Thrombolysis Time	Consolidation of A&E, all acute inpatients and supporting service on one site will facilitate an increased 24/7 on site senior medical cover with earlier diagnosis and treatment. This will result in an increase in eligible patients receiving thrombolysis within 60 minutes leading to a reduction in deaths and an increase in the number of people able to return to independent living. This will generate a human cost saving for society. The consolidation of services will also release capacity in the senior stroke team to work more closely with public health and primary care colleagues to raise awareness in the public about the importance of early presentation with symptoms of a suspected stroke (FAST positive symptoms). *	Use of Trust data on the current number of patients admitted with a stroke as a main diagnosis. Percentage of patients eligible for thrombolysis who receive it within 60 minutes (April -December 2013). Trust current average age of death of 74.1 years (from Trust data for 2012/13). Average national life expectancy of 85.15 years. Assumed human cost saving based on the difference between the cost of Trust current average age of death and average national life expectancy (11.05 years) with cost per Quality Adjusted Life Year (QALY) of £30,000 and average UK QALY applied. Assumed improvement under Grove Lane option to 20% of eligible patients admitted with a stroke receiving thrombolysis within 60 minutes (in line with national standard) Assumed improvement under 'Do Minimum' to 10% of eligible patients admitted with a stroke receiving thrombolysis within 60 minutes (in line with regional standard) Assumed thrombolysis rate within 60 minutes to remain as now (6.2%) under 'Do Nothing'. Reduction in deaths and increase in individuals remaining independent (assumptions based on work undertaken by the Public Health Department in relation to improvement in stroke care, for the Heart of Birmingham PCT showing that improved thrombolysis within 3 hours, using some national guidance around improvements from 1 -20 %, could result in 40 deaths being prevented and 16 individuals remaining independent). Human cost saving applied to assumed number of prevented deaths and people remaining independent.
Heart Disease Mortality and Morbidity	Consolidation of A&E, all acute inpatients and supporting service on one site will facilitate an increased 24/7 on site senior medical cover with earlier diagnosis and treatment.	Use of current incidence of heart disease in the local population and percentage of people with heart disease of working age. Assumption of a 50% reduction in people of

	It will also release capacity in the senior Cardiology team to work more closely with primary care colleagues in developing and delivering new care pathways (in line with *RCRH Programme*) to deliver significant health improvements. Earlier diagnosis and treatment for heart disease will result in a reduction in the number of people with heart disease of working age unable to work because of the heart disease. This will generate a greater contribution to GDP.	working age with heart disease unable to work on implementation of the improved heart disease care pathways as part of the *RCRH Programme* with an assumption that full implementation will occur over a 10 year period. Average GDP per capita per annum. Assumed full implementation of improved heart disease care pathways under Grove Lane solution Assumed partial implementation of improvement in heart disease care pathways under 'Do Minimum' delivering 67% of the anticipated benefits of full implementation Assumed partial implementation of improvement heart disease care pathways under 'Do Nothing 'delivering 33% of the anticipated benefits of full implementation as a result of the ongoing work of the *RCRH Programme*.

*From April 2013 the Trust provides stroke services on one site (Sandwell) and whilst improvements in performance have been seen the numbers of patients thrombolysed and the time to thrombolysis still do not meet best practice. This is partly the result of late presentation of patients and therefore a reduced number being eligible for thrombolysis and partly due to the workload of the out of hours on site medical cover.

5. Outcomes

The outcome of this analysis is contained in the table below and which shows a NPC of the benefits from the Grove Lane investment amounts to £796m whereas the Do Minimum shows £325m with the Do Nothing being zero, given zero investment.

Sandwell & West Birmingham Hospitals NHS Trust
Summary of External Benefits Quantification
Appraisal Timeline: 65 Years

External Benefit Considered	DO NOTHING		DO MINIMUM		Option: Grove Lane	
	NPC £000's	EAC £000's	NPC £000's	EAC £000's	NPC £000's	EAC £000's
Transport Related Services	0	0	- 7,793	- 288	65,285	2,414
Reduction in Mortality Rate	0	0	-	-	- 100,296	- 3,708
Reduction in discharges to nursing homes	0	0	- 52,515	- 1,942	- 122,411	- 4,526
Reduction in DNA Costs	0	0	- 31,946	- 1,181	- 103,262	- 3,818
Increased daycase rate	0	0	- 140,821	- 5,206	- 164,126	- 6,068
Public Health Benefits - Strokes	0	0	- 92,023	- 3,402	- 368,623	- 13,629
Increased Public Health Benefits: Reduced levels of Heart Disease	0	0	- 35	- 1	- 122	- 5
Total Health External Benefits	-	-	- 325,133	- 12,021	- 793,555	- 29,339

Further to this analysis, the Trust then considered the remaining two options:

- new build on City site and
- new build on the Sandwell site.

The conclusion reached was there was not a significant difference between these options compared to the Grove Lane solution. The table below contains the more detailed considerations:

External Benefit Considered	Consideration of the City and Sandwell sites
Transport	Marginal impact given location and associated travel distances but not material

Mortality	No difference between the new build options, all main acute services on one site
Discharges to nursing homes	No difference between the new build options
DNA reduction	There is no change to the OPD solution in that outpatients are spread across the existing sites
Day case	As with DNA, the community sites will be maintained for day case surgery
PHB- Stroke	The main acute clinical services would all be on one site and therefore no difference in the benefits anticipated for stroke
PHB- Heart Disease	The main acute clinical services would all be on one site and therefore no difference in the benefits anticipated for heart disease

The conclusion reached was that there may be a marginal difference in a few indicators but would not materially affect the health benefits and therefore the Grove Lane NPC should be used for the City and Sandwell new build options.

Appendix 1

DOCUMENT HISTORY

Document Location:

Document Location:

Version	Date	Location
Version 2.3	2014	OBC Update Version 4.5 as Appendix
Version 1	2011	OBC Version 4.4 as Appendix 5 of Appendix 8g

Revision History:

Version	Date	Author	Summary of Changes
V2.3	27/2/14	Jayne Dunn Redesign Director Right Care Right Here	Further update following review of benefits with the Medical Director and agreed change to hospital mortality ratio for single site options.
V2. 2	25/2/14	Kelly Eaves Partner- Delloitte	Updated with: • Insertion of summary table of outputs following update to model and revised calculations within it • Conclusion following consideration of Sandwell and City single site options
V2.1	18/2/14	Jayne Dunn Redesign Director Right Care Right Here	Move to Version 2 as part of 2014 OBC update. Draft 1 – amendments made to reflect current (2012/13) performance
Version 1	March 2011	Jayne Dunn Redesign Director Right Care Right Here	To support the Economic Appraisal and Benefits Quantification work for the OBC Version 4.4