UHL Strategic Reconfiguration Business Cases

Name of Business Case:	Interim ICU Outline Business Case (OBC)
Forum:	Finance & Investment Committee – 26th October 2017
Checklist Completed by:	Sue Nattrass, Senior Project Manager Reconfiguration
Project SRO:	John Jameson, Deputy Medical Director Debra Mitchell, Integrated Services Programme Lead

Background	The need to move Level 3 ICU away from LGH was first identified in 2014 owing to the increasing risk to clinical sustainability of the service. At this stage, the project was split into discrete business cases, which were approved internally by the Trust in 2015. This case was approved with a capital cost of £16.47m, an acknowledged interim operating cost pressure of £2.25m, (of the £2.25m, £2.05m was non-recurrent whilst acute services remain at the LGH); with an additional £640k of capital charges (see section 2.4.1). Owing to the national lack of capital for NHS developments, external capital for this project has not been available to date. The only component of this development that has been undertaken is the expansion of 6 ICU beds at the LRI into the Theatre Recovery area. This was funded through the Trust's internal Capital Resources Limit (CRL) in 2015. UHL was successful in its bid for funds for the move of Level 3 ICU off the LGH from the 2017 Spring Budget. The total cost of this bid was £30.8m. The capital ask has increased as the GH wards (previously assumed to be within retained estate) are now new build wards, since the original assumptions (based on left shift) which vacated wards at the GH have not come to fruition. Discussions with NHS Improvement (NHSI) and NHS England (NHSE) have concluded that in order to access the capital, UHL needs to submit a new OBC and FBC for the whole £30.8m value of the scheme. Lessons learned from the EF review of Phase 1 and the Vascular project are being intrinsically built into the project management of this project. This case is being discussed at EPB on the 24th October; and FIC on the 26th October. Any issues that arise from EPB will be raised verbally at FIC. Appendices are available upon request.

Confirm Commissioner support:	The Project Board includes a representative from the both the LLR CCGs and NHSE. We have secured letters of "support in principle" from both the CCGs and NHSE commissioners at this point in time. The OBC will be presented at the CCG Boards on November 14th, and through the NHSE formal governance process to secure full support.
Confirm Stakeholder support:	Support was secured from the OSCs in 2015 in relation to the clinical need for the relocation of ICU Level 3 from LGH site. A Healthwatch representative has been a member of the Project Board from its inception until this Summer, and we now have robust Patient Partner input into the Project via the Project Board and at service level within the CMGs.

		Business Case Reference
What is the purpose of this project?	The purpose of the project is to move Level 3 ICU services off the LGH site, along with specialties which are reliant on Level 3 beds (General Surgery, HPB and Renal Transplant), and associated clinical support services (Interventional Radiology).	2.2
Why is it being carried out?	This is the next stage in the creation of 2 acute sites. The Trust's five-year clinical strategy is to deliver Critical Care services through the creation of two 'super' Adult Critical Care hubs located at the LRI and GH; and the separation of planned and emergency care. UHL currently provides an adult ICU service on each of its three sites. This triplication of services creates inefficiency and an unsustainable clinical position; the biggest risk being the lack of a suitably qualified workforce to maintain safe Level 3 ICU services across the three sites.	2.4

What are the key assumptions in this business case?	This is lift and shift of the existing Level 3 ICU activity, and the dependent services, from LGH to LRI and GH. No increase in activity has been assumed. The net increase in ICU beds is 3; 2 of which remain at LGH as part of the HDU supporting the remaining activity on that site. The business case does not fund the staffing associated with additional ICU beds. General surgical and HPB patient pathways are improved by the implementation of a single site general surgical take and HPB. Additional workforce has been assumed in order to sustain surgery remaining at the LGH – e.g. the LGH surgical assessment unit needs to remain to support urology. Most additional revenue costs are incurred until reconfiguration takes place at which point they will be saved.	2.2.1 2.4.2 2.9.1 3.3.2

What are the Benefits?		**How will it be measured?**	**Business Case Reference**
To the patient	To provide a solution that maximises clinical quality and safety.	Reduced DATIX incidents, associated with this group of patients, relating to serious harm	2.12
	To deliver, at the earliest possible opportunity, a sustainable Level 3 ICU service across the Trust	Reduced elective cancellations Removal of risk for on-going provision of Level 3 service at LGH. 4 hour transfer time cross site for Level 3 patients.	2.12
	To ensure that the quality of the patient environment and experience remains a priority	Increased single room provision Improved privacy and dignity Improved infection prevention. PLACE assessment	2.12
To UHL	Alignment with the 5 year plan, supporting the move of services off LGH in line with our clinical strategy and is consistency with the DCP	Timeline and sequencing of reconfiguration programme	2.4
	To deliver a solution that ensures accessibility to services and maximises clinical adjacencies.	Delivers essential clinical adjacency	2.12

What are the Benefits?		How will it be measured?	Business Case Reference
	To deliver an ICU solution that facilitates recruitment and enables the delivery of high levels of teaching and training.	Reduced staff turnover Reduced vacancy factors Reduced agency expenditure	2.12
To LLR	The next step in the delivery of the reconfiguration programme as part of the STP – which will see the move of acute services off the LGH.	Timeline and sequencing of the STP Land disposal of the LGH Removal of the UHL Structural deficit (c.£25m)	2.8

		Business Case Reference
What is the solution?	There are four elements to the design as follows: • GH: Level 3 ICU beds– new build extension to the existing ICU (Bay B) • GH: HPB and Renal Transplant beds at – modular build wards to be provided as a second floor above existing wards 24, 25, 26 and 27 • GH: Interventional Radiology– provision of 3 IR Rooms and 1 ultrasound facility, including enabling works to relocate medical records, office space and on-call rooms • LRI: General Surgery beds– refurbishment of wards 15, 16 and 21 (to be vacated as part of Emergency Floor Phase 2) In addition to the above, there is an infrastructure work stream which will provide additional heating capacity, electrical supply capacity and medical oxygen ringmain across all elements of work at Glenfield Hospital.	4.4 4.5 5.2 5.4

What options have been considered?	The Do Nothing option of retaining Level 3 ICU at LGH has been assessed against the option to relocate it to LRI and GH. The Do Nothing option assesses the impact of UHL losing the activity that is dependent on level 3 ICU at the LGH in the event that the ICU becomes unsustainable. For each of the 4 schemes within the project option appraisal on the design solutions have been undertaken to identify the preferred solutions.	Economic Section 3
Are there any material deviations to recommended standards?	2 of the schemes relate to the refurbishment of retained estate which create derogation to national recommendations e.g. HBNs. The 2 new build options have derogation due to space constraints principally: • Bed spaces – ICU bed spaces of 20m^2 to 23m^2 as opposed to 25m^2 recommended bed spaces. • Percentages of single rooms – 30% as opposed to 50% recommendation These derogations are supported by the Chief Nurse and the clinical teams, and will be discussed with the NHSI quality team at a meeting on the 31st October. Once detailed design is completed a full list of derogations from HBNs and HTMs will be included in the FBC.	4.5 5.10 Appendices 22,23,24

How will it be implemented?	GH: ICU Extension – this will be achieved by a first floor new build on land between the main and east entrances. To facilitate this Bay B will be closed. Some re-provision of offices and storage will be necessary. GH: Modular Wards - this will be achieved by building over the roof of wards 24, 25, 26 and 27. This solution gives excellent clinical adjacencies and minimises impact on existing clinical services. GH: IR – this will be achieved by altering existing estate to accommodate the new facilities. Key enabling works are the relocation of Medical Records and offices into Mansion House and the Snoezelen building. Doctor's on-call rooms will be relocated to a suitable location such as the Staff Residencies. LRI: General Surgery Beds– the relocation of 2 general surgery wards from LGH to LRI will be achieved through the following ward moves: • LRI Ward 8 moves to LRI Ward 15 (vacated by the EF Phase 2 project) • LGH Ward moves to LRI Ward 16 (vacated by the EF Phase 2 project), this allows the formation of 2 surgical wards supported by an SAU • LRI Ward 21 moves to LRI Ward 33 (vacated by the EF Phase 2 project) to allow LGH Ward to move to LRI Ward 21 • LRI Wards 15, 16 and 21 will be subject to refurbishment and minor alteration Infrastructure associated with the GH wards involves the replacement and extension of electrical switchgear in Substations 1 and 2, the installation of a new boiler in the main boiler house and the installation of a new oxygen ringmain, supplied from a second source, thus greatly enhancing the resilience of the oxygen supply to GH	4.5
Are there any key dependencies ?	**Internal to UHL**: The completion of the Emergency Floor Phase 2 project releases wards 15 and 16 at the LRI which are required for General Surgery.	2.14
	External to UHL: Planning Permission is required for the HPB and Renal Transplant beds at GH.	5.15
	External to UHL: NHSI approval of the OBC and FBC and confirmation of the capital loan are required prior to construction commencing. NB: the OBC must be approved by NHSI before the FBC is submitted.	5.3.3
	External to UHL: Outcome of the national consultation on the future of Congenital Heart Disease – theatre at GH currently used by EMCHC required for HPB and Transplant activity.	2.14

When will it be completed?	• OBC approval at Trust Board: Nov 17 • OBC submitted to NHSI • OBC approval at NHSI: Jan 18 **(This needs confirmation)** • Planning permission received: Jan 18 • FBC approval at Trust Board: Feb 18 • FBC approval at NHSI: Apr 18 • Commencement of Enabling Works: May 18 • Completion of Enabling Works: Jul 18 • Commencement of Main Construction: May / Sep 18 • Completion of Main Construction: Oct 18-Jul 19 • Operational Commissioning & Go Live: May-Sep 19	2.5 7.3
How much will it cost?	Total capital cost of project is £30.8m. This is broken down as follows: • GH: Level 3 ICU beds at - £5.171m • GH: HPB and Renal Transplant beds - £17.937m • GH: Interventional Radiology- £6.056m • LRI: General Surgery beds - £1.634m	6.2 Appendices 41, 42, 43, 44
Will it be affordable?	The original cases were approved in 2015 with an acknowledged interim operating cost pressure of £2.25m (of which £2.05m was non recurrent whilst acute services remain at the LGH); with an additional £640k of capital charges. These additional operating costs have now increased to £2.5 million per annum once the services have transferred until the all acute services move off the LGH. The main issue is the increased cost of FM with 3 new wards (as opposed to using vacated existing wards). Capital Charges are anticipated to be an additional £700k per annum. (This is £60k more than in 2015, as a result of additional capital expenditure for new build offset by an assumption about a greater level of impairment and a resultant reduction on return on assets.) The additional cost pressure on the Trust is assumed to be funded by the circa £5m per annum allowance made in the Financial Strategy for annual operating cost pressures. It is assumed that the capital cost of £30.8 million is funded through treasury loans. The current interest rate of a 25 year loan (the maximum available) is 1.76%.	6.3

How will the project contribute to deficit reduction?	This is the next step in the Reconfiguration Programme that will eliminate the structural deficit of c. £25m. However, during the transitional period to full reconfiguration, the scheme will increase the Trust's I&E deficit by circa £3.2 million.	6.3
How have patients been involved?	From inception of the project to Summer 2017 there has been consistent attendance at the Project Board by a Healthwatch representative, there is now a Patient Partner on the Board. The HPB and renal patients have been consulted on the first stage of the ward designs and patient engagement will be undertaken during detailed design stages.	4.6.2 7.2.1
What external assurance has been obtained?	We have been successful in obtaining funding against a bid made to DH as part of the LLR STP capital announced in the Spring 2017 budget. This is subject to Business Case approval; we have had confirmation that the initial bid is being considered as equivalent to a Strategic Outline Case, which has been approved. A Gateway Review was undertaken in July 2015 which resulted in a Delivery Confidence Assessment of Amber. A Gateway Risk Potential Assessment has been completed which resulted in a score of 38 (Medium Risk), which means that a formal Gateway review is discretionary. Discussion with the SROs has concluded that a further Healthcheck review is unlikely to add material value at this stage. There have been on-going discussions with NHSI and NHSE and PAU regarding this issue who are supportive of our approach.	2.5 7.9

Risks (scoring over 15)		**Mitigations**	**RAG**	**Business Case Reference**
Operational	There is a risk that the movement of specialties onto intended sites will increase operational pressure and flow in the specialties that move as well as specialties that support them (e.g. HDU)	Trust wide programmes looking at diagnostic support; demand and capacity initiatives; use of estate	16	7.7.1 Appendix 10
	There is a risk that separating services will compromise existing models of care for the specialties that move as well as specialties remaining on the LGH site	On-going review of models of care & clinical operational policies with services to ensure implications considered & mitigations	16	7.7.1 Appendix 10

Risks (scoring over 15)		Mitigations	RAG	Business Case Reference
	There is a risk associated with managing ICU demand during the construction period as 4 ICU beds will be closed on the GH site as Bay B is expanded	Mitigations for loss of beds in place with the use of recovery beds	16	7.7.1 Appendix 10
Project Delivery	Timescales are delayed due to approval processes required for OBC and FBC	Discussions with NHSI re management and production of business cases	16	7.7.1 Appendix 10
Finance	Increased non-recurrent revenue impact	Finance lead reviewing & validating workforce impact with all services. Some increase is supported – this is included in the OBC	16	7.7.1 Appendix 10
Workforce	There is a risk around clear provision of junior doctor cover at night, and that the service would not be sufficient for remaining patients at LGH once services have relocated off site.	Workforce lead liaising with Hospital at Night team; operational plans to be developed. On-going discussions with CMGs & training programme leads re potential impact & rotas	16	7.7.1 Appendix 10
	There is a risk that effective and sustainable Medical cover across all sites will not be provided, in particular the knock-on impact of the move on Surgical Specialties	Effective planning across all sites and all levels (junior and middle grade posts)	16	7.7.1 Appendix 10
Comms & Engagement	Significant demands made on CMGs simultaneously impacting on ability to support development of Business Cases	Developed communications plan: meetings will be held as necessary, not routine / regular	16	7.7.1 Appendix 10
Estates	Inability to undertake enabling works to allow schemes to deliver on time	Detailed programme plan and review of capital funding once allocated	15	7.7.1 Appendix 10

Risks (scoring over 15)		Mitigations	RAG	Business Case Reference
	Inability to deliver the Estates aspects of the OBC/FBC within the required timescales	Resources put in place to enable timely delivery of OBC/FBC	15	7.7.1 Appendix 10
	Lack of information / engagement from I.T.	Discussion with John Clarke & Liz Simons	15	7.7.1 Appendix 10

University Hospitals of Leicester NHS
NHS Trust

Outline Business Case

UHL Clinical Strategy (Phase 2)
Interim ICU – Relocation of Level 3 ICU from LGH

October 2017

Version	**Version 11**
Issue date	**26 October 2017**

Building Caring at its best

Document Quality Management

Title	UHL Clinical Strategy (Phase 2) Interim ICU – Relocation of Level 3 ICU from LGH
Date	26 October 2017
Prepared by	Sue Nattrass, Senior Project Manager
Checked by	Nicky Topham, Reconfiguration Programme Director
Authorised by	Paul Traynor, Chief Financial Officer and SRO for Reconfiguration Programme

Document History

Version	Date	Brief Summary of Change	Author
1	14/10/17	Composite OBC pulled together	S. Nattrass
2	16/10/17	Review and updates to Strategic & Management Cases	N. Topham
3	16/10/17	Updates to Finances and D16	S. Bhogaita & V. Turner
4	16/10/17	Updates to Economic Case and Programme Plan in Management Case	T. Pearce & S. Nattrass
5	16/10/17	Inclusion of Commercial Case	E. Neal
6	16/10/17	Inclusion of Financial Case Draft OBC issued to Project Board	T. Pearce S. Nattrass
7	18/10/17	Revised Chapters incorporated and OBC reformatted.	K. Leeder
8	19/10/17	Review and updates to Strategic & Management Cases	J. Lewin
9	20/10/17	Revised Economic, Quality, Commercial and Financial Cases. Draft OBC circulated to Project Board for comment	A. Fawcett
10	23/10/17	Comments incorporated following Project Board review. Submission to Reconfiguration Board, EPB and FIC.	A. Fawcett
11	26/10/17	Comments incorporated following EPB and FIC. Submission to UHL Trust Board	S Nattrass

Schedule of Approval

Version	Date Issued	Forum	Date Approved
6	16/10/17	Project Board	18/10/17
10	23/10/17	Executive Performance Board	24/10/17
10	23/10/17	Reconfiguration Programme Board	25/10/17
10	23/10/17	Finance and Investment Committee	26/10/17
11	26/10/17	UHL Trust Board	02/11/17
11	TBC	CCG Boards	14/11/17

Confirmation of External Support

	Date
Leicester City CCG	14/11/17 – TBC
East Leicestershire and Rutland CCG	14/11/17 – TBC
West Leicestershire CCG	14/11/17 – TBC

Glossary of Terms

Acronym	Description
AICU	Adult Intensive Care Unit
ALOS	Average Length Of Stay
BCF	Better Care Fund
CCG	Clinical Commissioning Group
CHUGGs	Cancer, Haematology, Urology, Gastroenterology and General Surgery
CIP	Cost Improvement Programme
CMG	Clinical Management Group
CRL	Capital Resource Limit
CSI	Clinical Support and Imaging
CVD	Cardiovascular disease
DCCM	Department of Critical Care Medicine
DCP	Development Control Plan
EAC	Equivalent Annual Cost
ECMO	Extra corporeal membrane oxygenation
EFL	External Financing Limit
ERCP	Endoscopic Retrograde Cholangio-pancreatography
ESB	Executive Strategy Board
ESM	Emergency and Specialist Medicine
EUS	Endoscopic Ultrasound
FBC	Full Business Case
FM	Facilities Management
GEM	Generic Economic Model (Dept of Health)
GH	Glenfield Hospital
HDU	High Dependency Unit
HPB	Hepato-Pancreato-Biliary
I&E	Income and Expenditure
IBD	Interest Bearing Debt
ICNARC	Intensive Care National Audit and Research Centre
ICU	Intensive Care Unit
IFPIC	Integrated Finance and Performance Investment Committee
IM&T	Information Management and Technology

Acronym	Description
ITAPS	Intensive Care, Theatres, Anaesthetics, Pain and Sleep
ITFF	Independent Trust Financing Authority
JSNA	Joint Strategic Needs Assessment
LGH	Leicester General Hospital
LRI	Leicester Royal Infirmary
LTFM	Long Tem Financial Model
MSS	Musculoskeletal and Specialist Surgery
NHSE	NHS England
NHSI	NHS Improvement
NIHR	National Institute for Health Research
NPC	Net Present Cost
NSSG	Network Site Specific Groups
NTDA	National Trust Development Authority
OSC	Overview and Scrutiny Committee
PA	Planned Activity
PCT	Primary Care Trust
PDC	Public Dividend Capital
PLACE	Patient led assessment of the care environment
PVE	Portal Vein Embolisation
RRCV	Respiratory, Renal, Cardiac and Vascular
RTT	Referral to Treatment Time
SARF	Severe acute respiratory failure
SIRT	Selective Internal Radiation Therapy
SMART	Specific Measurable Achievable Realistic Time related.
SRO	Senior Responsible Officer
STP	Sustainability and Transformation Partnership
TACE	Transcatheter Chemo Embolisation
TAVI	Trans-Catheter Aortic Valve Insertion
UHL	University Hospitals of Leicester
VAT	Value Added Tax
VFM	Value for Money
W&C	Women's and Children's
WTE	Whole Time Equivalent

Contents

Document Quality Management 2
Document History 2
Schedule of Approval 3
Confirmation of External Support 3
Glossary of Terms 4
1. Executive Summary 12
1.1 Introduction 12
1.2 Strategic Case 13
1.3 Economic Case 17
1.4 Quality Case 20
1.5 Commercial Case 20
1.6 Financial Case 22
1.7 Management Case 24
1.8 Conclusion 25
2. The Strategic Case 27
2.1 Structure and Content of the Document 27
2.2 Introduction 27
2.3 Organisation Overview 29
Part A: The Case for Change 31
2.4 Clinical Drivers for Change 31
2.5 Background 33
2.6 Investment Objectives 36
Part B: The Strategic Context 37
2.7 Business Strategies 37
2.8 Health Economy Strategies 42
2.9 ICU Strategy 50
2.10 Surgical Services across LGH and LRI 56
2.11 Surgical Services Moving to GH 59
2.12 Main Benefits Criteria 69
2.13 Main Risks 70
2.14 Constraints and Dependencies 71
3. The Economic Case 73
3.1 Introduction 73
3.2 Overall Economic Position for Critical Care 73

3.3 Interim ICU Expansion – Glenfield Hospital 80
3.4 Interventional Radiology – Glenfield Hospital 85
3.5 Additional Beds – Glenfield Wards....89
3.6 Additional Beds – LRI....93
3.7 Summary of Preferred Option 97

4. The Clinical Quality Case....99
4.1 Introduction....99
4.2 Clinical strategy and Commissioning Intentions....99
4.3 Clinical Sustainability....100
4.4 Design and Build 100
4.5 Scheme Design Development....104
4.6 Leadership and Stakeholder Engagement....111
4.7 Workforce 113
4.8 Learning and Continuous Improvement 114

5 | The Commercial Case 115
5.1. Introduction....115
5.2. Scope 115
5.3. Procurement Strategy and Implementation Timescales 115
5.4. Subject Matter for Procurement 118
5.5. 1:200 Drawings....122
5.6. Schedule of Accommodation (SoA) 122
5.7. Design Quality Review 123
5.8. Mandatory Government Construction Strategy....123
5.9. Government Consumerism Requirements....123
5.10. Compliance with HBN/HTM....125
5.11. BREEAM (Building Research Establishment Environmental Assessment Method)....126
5.12. DH Energy and Sustainability....126
5.13. Resilience to Hazards 128
5.14. Travel Plan 128
5.15. Planning Permission....128
5.16. Potential for Risk Transfer....129
5.17. Proposed Charging Mechanisms 129
5.18. Proposed Contract Lengths....129
5.19. Proposed Key Contractual Clauses 130
5.20. Land Transactions....130

6. The Financial Case....131
6.1 Introduction....131
6.2 Capital Costs 131
6.3 Income and Expenditure 132
6.4 Impact on Trust Income, Cash Flow and Balance Sheet....139
6.5 Affordability....139

7. The Management Case 141
7.1 Introduction 141
7.2 Project Management Arrangements 142
7.3 Project Plan 145
7.4 Use of Special Advisers 146
7.5 Outline Arrangements for Change and Contract Management 147
7.6 Outline Arrangements for Benefits Realisation 148
7.7 Outline Arrangements for Risk Management 148
7.8 Outline Arrangements for Post Project Evaluation 149
7.9 Gateway Review Arrangements 151
7.10 Contingency Plans 152
Appendices 153

List of Figures

Figure 1 - Key service relocations 12
Figure 2 - Planned Journey to Deliver Service Reconfiguration 15
Figure 3 - Trust Capital Governance Framework 24
Figure 4 - Key service relocations 28
Figure 5 - Leicester City JSNA extract 40
Figure 6 - Leicestershire JSNA extract 41
Figure 7 - Rutland JSNA Extract 42
Figure 8 - Bed increases: 2017/18 and 2020/21 44
Figure 9 - Planned Journey to Deliver Service Reconfiguration 46
Figure 10 - Trust Strategic Objectives for 2017/18 49
Figure 11 - Trust Quality Commitment Statement 50
Figure 12 - Critical Care UK and International Capacity Benchmarks 51
Figure 13 - Route of Admission to HPB Service 61
Figure 14 - HPB Inpatient and Emergency (LGH) 62
Figure 15 - GH site Locations for Preferred Options 98
Figure 16 - Internal Adjacencies IR GH 111
Figure 17 - Balmoral and Windsor Stacking Diagram, LRI 122
Figure 18 - Trust Capital Governance Framework 142

List of Tables

Table 1 - Combined ICU Project Scores 17
Table 2 - ICU Expansion GH Options 18
Table 3 - Interventional Radiology GH Options 18
Table 4 - Additional Beds GH Options 18
Table 5 - Additional Beds LRI Options 18
Table 6 - Cost per Benefit for Each Option 19
Table 7 - Preferred Option for Each Scheme 19
Table 8 - Preferred Procurement Options 21
Table 9 - Summary of Capital Costs 22
Table 10 - Financial Position of this Outline Business Case 22
Table 11 - Capital Charge Impact of Scheme (ICSL) 23
Table 12 - Project Programme 24
Table 13 - Timeline of Decision Making 33
Table 14 - National Strategies, Programmes and Policies 37
Table 15 - Mitigation against Growth in Acute Beds 45
Table 16 - Current Physical and Funded Level 3 and 2 Bed Numbers 53
Table 17 - Elective Cancellations 2016/17 due to Lack of ITU beds (sourced from HIS data set) 53
Table 18 - Current Specialty use of Level 3 Critical Care at LGH, by bed day 53
Table 19 - Future Site Locations of those Services Dependent on Level 3 care 54
Table 20 - Current and Future Provision for ICU Bed Spaces across UHL 55

Table 21 - Pre and post Reconfiguration ICU bed days and beds 55
Table 22 - Unplanned ICU Level 3 patients 55
Table 23 - Current Configuration of GI Surgery across LRI and LGH 56
Table 24 - Surgical Wards at LGH 57
Table 25 - Surgical Wards Across UHL 57
Table 26 - Emergency Theatre Demands at LRI following reconfiguration 58
Table 27 - HPB Activity Analysis 61
Table 28 - Inpatient Facilities at LGH 63
Table 29 - Transplant Figures 64
Table 30 - Transplant Activity 2016/17 64
Table 31 - Demand for Theatre Capacity at GH 64
Table 32 - Available Theatre Capacity at GH 65
Table 33 - Clinical and Imaging CMG Service Level Objectives 67
Table 34 - Investment Objectives and Benefits 69
Table 35 - Main Risks 70
Table 36 - Benefits and Disadvantages of the Do Nothing Option 74
Table 37 - Benefits and Disadvantages of the Relocation of Level 3 Services option 74
Table 38 - Detailed Benefits Criteria 75
Table 39 - Benefit Criteria Weighting 76
Table 40 - Weighted Scores: ICU Project 76
Table 41 - Do Nothing Costs 77
Table 42 - Critical Care Additional Costs 78
Table 43 - ICU Project Risk Assessment 78
Table 44 - Net Present Cost (NPC) and Equivalent Annual Cost (EAC) of each option 78
Table 45 - NPC and EAC of each option, assuming overall site reconfiguration does not happen 79
Table 46 - Combined ICU Project Scores 79
Table 47 - ICU Expansion GH Options 80
Table 48 - ICU Expansion GH Weighted Scores 80
Table 49 - ICU Expansion GH Capital Costs 81
Table 50 - ICU Expansion GH Changes in Workforce Revenue Costs 83
Table 51 - ICU Expansion GH Risk Assessment 83
Table 52 - ICU Expansion GH Net Present Cost and Equivalent Annual Cost of each option 84
Table 53 - ICU Expansion GH Combined Scores 84
Table 54 - Interventional Radiology GH Site Options Explored 85
Table 55 - Interventional Radiology GH Weighted Scores 85
Table 56 - Interventional Radiology GH Capital Costs 86
Table 57 - Interventional Radiology GH Changes in Workforce Revenue Costs 87
Table 58 - Interventional Radiology GH Risk Assessment 88
Table 59 - Interventional Radiology GH Net Present Cost and Equivalent Annual Cost of each option 88
Table 60 - Interventional Radiology GH Combined Scores 88
Table 61 - Additional Beds GH Options 89
Table 62 - Additional Beds GH Weighted Scores 89
Table 63 - Additional Beds GH Capital Costs 90

Table 64 - Additional Beds GH Changes in Workforce Revenue Costs 91
Table 65 - Additional Beds GH Risk Assessment 92
Table 66 - Additional Beds GH Net Present Cost and Equivalent Annual Cost of each option 92
Table 67 - Additional Beds GH Combined Scores 92
Table 68 - Additional Beds LRI Options 93
Table 69 - Additional Beds LRI Weighted Scores 93
Table 70 - Additional Beds LRI Capital Costs 94
Table 71 - Additional Beds LRI Changes in Workforce Revenue Costs 95
Table 72 - Additional Beds LRI Risk Assessment 96
Table 73 - Additional Beds LRI Net Present Cost and Equivalent Annual Cost of each option 96
Table 74 - Additional Beds LRI Combined Scores 97
Table 75 - Preferred Option for Each Scheme 97
Table 76 - UHL PLACE Results (2016 and 2017) Compared to the National Average 102
Table 77 - Clinical Adjacencies ICU Extension GH 105
Table 78 - Clinical Adjacencies New Build Wards GH 107
Table 79 - Clinical Adjacencies New Build Wards LRI 109
Table 80 - Clinical Adjacencies IR GH 110
Table 81 - Preferred Procurement Options for Each Scheme 116
Table 82 - Percentage Allowance of Departmental Cost for Equipment 117
Table 83 – Milestones for Implementation 118
Table 84 - Delivery of Consumerism 124
Table 85 - BREEAM Draft Pre-Assessments 126
Table 86 - Construction Programme 129
Table 87 - Land Sale Estimated Values 130
Table 88 - Summary of Capital Costs 131
Table 89 - Financial Position of this Outline Business Case 132
Table 90 - Operational Costs Analysed by Cost Areas 132
Table 91 - Workforce Costs 133
Table 92 - Additional Staffing Following Move of General Surgery L3 Patients from LGH 136
Table 93 - FM Costs 138
Table 94 - Capital Charge Impact of Scheme (ICSL) 139
Table 95 - Impact on the Trust's Balance Sheet 139
Table 96 - Project Board Roles and Responsibilities 143
Table 97 - Project Programme 145
Table 98 - Special Advisers: ICU Extension GH 146
Table 99 - Special Advisers: IR GH 146
Table 100 - Special Advisers: New Build Wards GH 147
Table 101 - Special Advisers: Ward Refurbishment LRI 147
Table 102 - Recommended Actions Following July 2015 Healthcheck Review 151

1. Executive Summary

1.1 Introduction

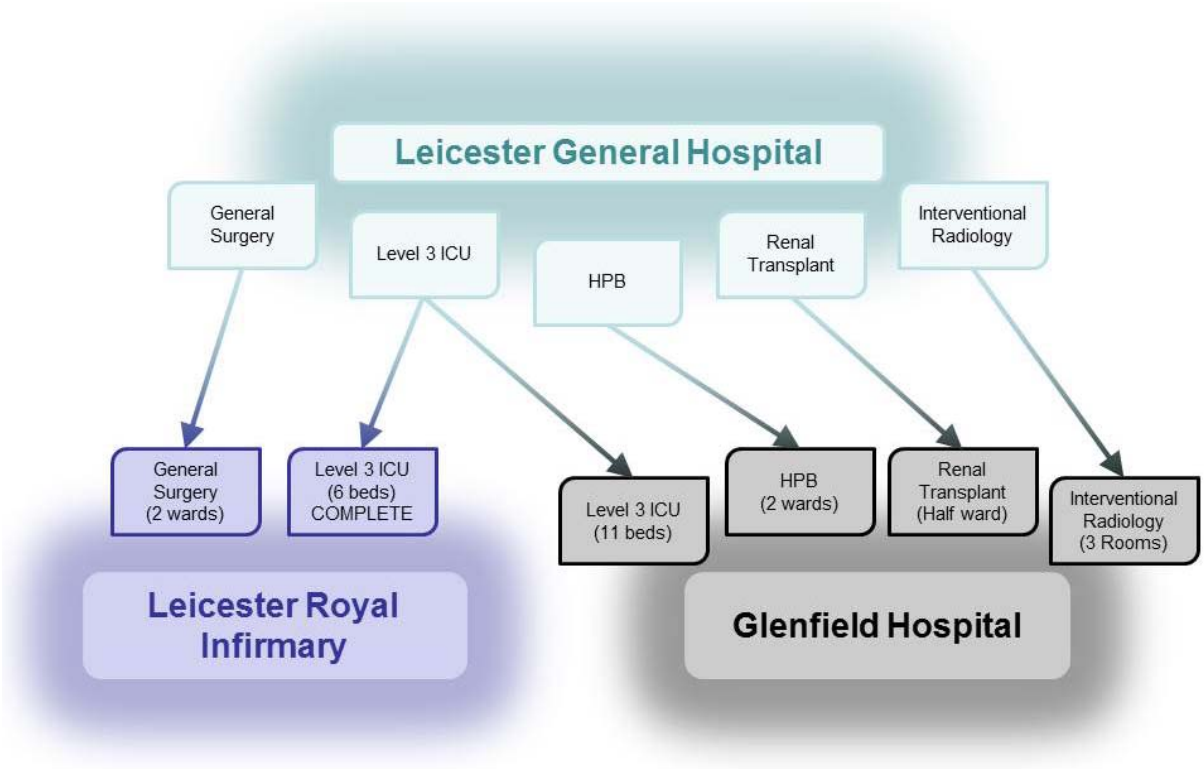
This Outline Business Case (OBC) is for the first stage reconfiguration of elements of the Intensive Care Unit (ICU) currently located at the Leicester General Hospital (LGH) site of the University Hospitals of Leicester NHS Trust (hereafter referred to as "UHL" or "the Trust").

It proposes to transfer current level 3 adult critical care activity, and associated dependent services, to the Leicester Royal Infirmary (LRI) and the Glenfield Hospital (GH), retaining a reduced Level 2 service only at LGH.

This OBC relates to the following schemes required to deliver this;

- The expansion of ICU at GH by 11 bed spaces;
- The refurbishment of space at GH for the development of interventional radiology facilities;
- The development of new wards at GH to support the transfer of Hepatobiliary (HPB) and Renal Transplant services from LGH;
- The refurbishment of ward space at LRI to support the transfer of colorectal and emergency general surgery services from LGH.

Figure 1 - Key service relocations



1.2 Strategic Case

1.2.1 Structure and Content of the Document

The OBC has been prepared using the agreed standards and format for business cases, as set out in Department of Health guidance and HM Treasury Green Book.

The approved format is the Six Case Model, which comprises the following key components:

- The **strategic case** section. This sets out the case for change, together with the supporting investment objectives for the scheme;
- The **economic case** section. This demonstrates that the organisation has selected the most economically advantageous offer, which best meets the existing and future needs of the service and optimises value for money (VFM);
- The **quality case** section. This demonstrates that the organisation has considered the investment from a clinical quality, workforce, patient safety and patient experience perspective, and has engaged with key stakeholders for the benefit of patients, the public and the wider health community;
- The **commercial case** section. This sets out the content of the proposed procurement method;
- The **financial case** section. This confirms funding arrangements, affordability and the effect on the balance sheet of the organisation;
- The **management case** section. This details the plans for the successful delivery of the scheme to cost, time and quality.

1.2.2 Organisational Overview

UHL is one of the biggest and busiest NHS Trusts in the country, serving the one million residents of Leicester, Leicestershire and Rutland – and increasingly specialist services to a much wider area. The Trust provides nationally and internationally-renowned specialist treatment and services in cardio-respiratory diseases, extracorporeal membrane oxygenation (ECMO), cancer, vascular and renal disorders to reach a further two to three million patients from the rest of the country.

UHL provides services from three sites - the Leicester General Hospital (LGH), Glenfield Hospital (GH) and the Leicester Royal Infirmary (LRI) hospitals. The Trust works closely with partners at the University of Leicester and De Montfort University providing world-class teaching to nurture and develop the next generation of doctors, nurses and other healthcare professionals, many of whom go on to spend their working lives with the Trust.

1.2.3 Leicester, Leicestershire and Rutland (LLR) Sustainability

The LLR footprint forms a Sustainability and Transformations Partnership (STP) boundary. The clinical strategy in the LLR STP outlines the requirement for UHL to consolidate services on to two hospital sites and ring-fence elective activity.

For nearly two decades the need to consolidate acute services in Leicester has been widely recognised. The current, three acute site configuration is an accident of history, not design, and is suboptimal in clinical, performance and financial terms, which has a direct impact on patient outcomes and experience. This results in duplication, sometimes triplication of services, which is an inefficient model. Clinical resources are therefore spread too thinly making services operationally unstable. Many planned, elective and outpatient services currently run alongside emergency services and as a result when emergency pressures increase, it is elective patients who suffer delays and last minute cancellations.

Over the last two decades there has been sustained under-investment in UHL's acute estate relative to other acute hospitals across the UK. There is a significant backlog maintenance requirement which will be reduced substantially through the consolidation of services onto two sites and a change of use for LGH.

The STP clearly articulates this strategic need to reconfigure UHL onto two acute sites. Through the Trust's Reconfiguration Programme, there will be a focus on emergency and specialist care at LRI and GH, whilst ensuring that appropriate clinical services are provided in the county's community hospitals, to offer care as close to home as possible. The patient is at the heart of reconfiguration, and through consolidation, improved patient experience and quality will be delivered by:

- Providing services which are quicker, easier to navigate and of a higher quality; largely as a result of being able to focus on specialisms, improve processes and streaming, and because staff will no longer be spread across three main sites;
- Reducing delays to care by streamlining care pathways;
- Reducing unnecessary patient journeys;
- Reduce cancellations by protecting our elective beds by separating out emergency and planned care. This will be done by creating a planned ambulatory care hub at the GH as well as re-distributing some of our services into the counties' community hospitals;
- Improving the quality of the patient environment;
- Improving clinical adjacencies so that support and diagnostic services are close to where they are needed, promoting closer team working and providing a better patient experience;
- Addressing the long standing mismatch between demand and capacity by making sure there is the right number of beds in medicine and the two new 'super ICUs'. This will have a knock on improvement for operating theatres as well as improving ability to deliver against the 62 and 31 day cancer performance metrics and the 18 week RTT standard;
- The provision of a single site Maternity Hospital (subject to public consultation) which allows the creation of a comprehensive, safe, sustainable and effective service for the future through workforce changes and improved training, teaching, education and research.

The capital requirement to enable this consolidation is £397.5m. This forms the basis of UHL's bid for capital against the 2017 Autumn Budget which will be announced on 22nd November.

Figure 2 - Planned Journey to Deliver Service Reconfiguration

The first step in the Reconfiguration Programme was delivered in May 2017 with the transfer of vascular services from LRI to GH; this entailed the development of a new Hybrid Theatre and establishment of a comprehensive integrated vascular, cardiology and cardiac surgery service providing the best possible care to our patients with cardiovascular disease.

The scheme detailed in this OBC is the next set of key building blocks towards acute site consolidation and will bring significant clinical benefits both for this project, the wider Reconfiguration Programme, and the STP. The total capital requirement of £30.8m has been supported in principle from the 2017 Spring Budget, subject to Business Case approval.

1.2.4 Commissioner Support from NHSE and LLR CCGs

This OBC is founded on the transfer of existing activity levels from the impacted services (ICU, HPB, transplant, colorectal, emergency general surgery) to their new sites. No assumption has made in relation to any future expansion or growth of these services.

The long term reconfiguration solution captures assumptions in relation to the impact of demographic changes across all services and delivers the modelled, required acute bed numbers outlined in the STP. The schemes have been future proofed with reference to the bed numbers upon which the revised estates strategy and Development Control Plan (DCP) (to be included in FBC) will be based.

This OBC is an integral part of the LLR STP which is supported by all health partners within LLR. Commissioner support has been received from both NHSE and LLR CCGs. The

commissioners confirm their understanding that there is no planned increase in activity associated with this case or financial implications outside or normal commissioning arrangements.

1.2.5 Timeline of Project Development

The need to move Level 3 ICU away from LGH was first identified in 2014 owing to the increasing risk of clinical sustainability of the service as identified below. At this stage, the project was split into discrete business cases, each with a value of less than £5.0m, which were approved internally by the Trust in 2015.

This approach was supported at the time by the National Trust Development Authority (NTDA). Owing to the national lack of capital for NHS developments, external capital for this project has not been available to date.

UHL was then successful in its bid for funds for the move of Level 3 ICU away from LGH from the 2017 Spring Budget. Discussions with NHS Improvement (NHSI) and NHS England (NHSE) have concluded that UHL needs to submit a new OBC and FBC for the whole £30.8m value of the scheme.

1.2.6 ICU Strategy/ Clinical Drivers for Change

The Trust's five-year clinical strategy includes the need to deliver critical care services through the creation of two 'super ICUs' by 2021/22 located at LRI and GH. Triplication of services creates inefficiency and an unsustainable clinical position; the biggest risks are the lack of a suitably qualified workforce to maintain safe Level 3 ICU services across the three sites, and the cancellation of elective cases.

The need to move Level 3 ICU away from LGH was first identified in 2014 owing to the increasing risk of clinical sustainability of the service. These include:

- The reduced opportunities for critical care staff to gain adequate experience in providing care for the most ill patients has been affected by a reduction of Level 3 patients cared for at LGH;
- Changes in the way medical training for intensive care staff is structured has led to the removal of training designation status at the LGH unit and therefore the ability to place trainees at LGH;
- The retirement of experienced consultant grade staff from LGH;
- Recruitment to substantive posts at LGH has failed repeatedly as posts have become unattractive owing to the loss of training designation and the reduction in patient acuity;
- A national shortage of experienced critical care nursing and medical staff compounding recruitment problems.

A number of mitigations have been put in place by the ITAPS CMG to ensure the continued safe service provision at LGH since this time and during the development of this project. Whilst these mitigations help to ensure the continued delivery of a safe service at LGH, the service remains unsustainable in the long term.

1.2.7 Investment Objectives

The key investment objectives for this project are as follows:

- To provide a solution that maximises clinical quality and safety;
- To deliver, at the earliest possible opportunity, a sustainable Level 3 ICU service across the Trust;
- To deliver an ICU solution that facilitates recruitment and enables the delivery of high levels of teaching and training;
- To ensure that the quality of the patient environment and experience remains a priority;
- To provide a solution which fits with future Trust Reconfiguration Programme and is consistent with the DCP;
- To deliver a solution that ensures accessibility to services and maximises clinical adjacencies and efficiency.

1.3 Economic Case

The Trust has reviewed its overall position in respect of transferring all services related to the provision of LGH Level 3 critical care service to LRI and GH. It has carried out a high level economic appraisal which compares a Do Nothing scenario with respect to the critical care facilities at LGH with a scenario which moves critical care beds and associated services from LGH to LRI and GH. Whilst other options are possible, the Preferred Option is seen as the only one that is consistent with the Trust's long term financial and clinical strategy of re-providing all acute services at LRI and GH.

The combination of the non-financial and financial appraisals gives the following positions:

Table 1 - Combined ICU Project Scores

	Net Present Cost		Equivalent Annual Cost	
	Do Nothing	**Relocation of ICU**	**Do Nothing**	**Relocation of ICU**
GEM Generated NPC/ EAC £'000	1,877,164	1,576,523	70,789	59,452
Risk Adjustment NPC/EAC £'000	23,823	35,924	898	1,355
Risk Adjusted NPC/EAC £'000	**1,900,987**	**1,612,447**	**71,687**	**60,806**
Benefits score	298	793	298	793
Cost Per Benefit Point £'000	**6,390**	**2,035**	**241**	**77**

Non-financial option appraisals together with financial and economic appraisals were undertaken for the shortlisted options for each of the four separate schemes within this case.

1.3.1 Short Listed Options

The short listed options for each of the four components of the scheme can be seen below:

Table 2 - ICU Expansion GH Options

Option	Description
New build Option 1	New build expansion into courtyard adjacent to current ICU bay
New build Option 2	New build areas at several proposed locations around the outskirts of the current ICU department
New build Option 3	New build area that allows the direct expansion of Bay B and increases the size of the existing unit.

Table 3 - Interventional Radiology GH Options

Option	Description
A. New Build Outside of Imaging	Construction of new capacity outside of the main entrance to the Glenfield Hospital
B. New Build at Ivydene House	Construction of new capacity on the site of Ivydene House at Glenfield Hospital
C. New Build in South Entrance Staff Car Park	Construction of new capacity in the car park adjacent to the South Entrance at Glenfield Hospital
D1. Refurbishment of Medical Records and Offices – void space unutilised	Conversion of Medical Records and office space, adjacent to existing Imaging space
D2. Refurbishment of Medical Records and Offices – void space utilised	Conversion of Medical Records and office space, adjacent to existing Imaging space, utilising a courtyard void area

Table 4 - Additional Beds GH Options

Option	Description
Option 1	New build development situated on a newly developed 3rd Floor of the main GH building, on top of existing wards 24, 25 and 26
Option 2	A 3 Storey development situated externally to the rear of the main hospital building near to Wards 19 and 20 - linked to the main hospital building via a new corridor at first floor level

Table 5 - Additional Beds LRI Options

Option	Description
Option 1	General Surgery (2 wards) relocate into Ward 7 Balmoral Level 3 and Ward 21, Balmoral Level 6. Medicine vacates Ward 21 and moves to Ward 33 and EDU transfers from Ward 7 to Phase 2 Emergency Floor when it becomes operational.
Option 3	Ward 19 (Paediatric Surgery) relocates to Ward 14 when the Children's Admissions Unit (currently occupying ward 14) relocates to the Emergency Floor (April 2018). General Surgery (1 ward) relocates to Ward 19 (Balmoral Level 6) and General Surgery (1 ward) relocates to Ward 21 when Ward 21 moves to ward 33.
Option 5	General Surgery (1 ward) relocates to Ward 15 when it relocates to Emergency Floor Phase 2. General Surgery (1 ward) relocates to Ward 21 when Ward 21 moves to ward 33.

Option	Description
Option 6	General Surgery (1 ward) relocates to Ward 15 when it relocates to Emergency floor Phase 2. General Surgery (1 ward) relocates to Ward 7, Level 3 Balmoral, when EDU relocates to Phase 2 Emergency Floor.
Option 9	General Surgery (1 ward) relocates to Ward 21 when Ward 21 moves to Ward 33 Balmoral Level 6, General Surgery (1 ward) relocates to Ward 16, Balmoral Level 5 and SAU Ward 8 relocates to Ward 15, Balmoral Level 5 forming a co-located surgical assessment unit.

The cost per benefit for each option for the four schemes are summarised below.

Table 6 - Cost per Benefit for Each Option

Appraisal Summary - ICU	Net Present Cost £'000			Equivalent Annual Cost £'000		
	Option 1	Option 2	Option 3	Option 1	Option 2	Option 3
Cost Per Benefit Point	**425.30**	**452.39**	**377.58**	**16.04**	**17.06**	**14.24**

Appraisal Summary – Interventional Radiology	Net Present Cost £'000			Equivalent Annual Cost £'000		
	Option A	Option D1	Option D2	Option A	Option D1	Option D2
Cost Per Benefit Point	**890**	**692**	**704**	**33.55**	**26.08**	**26.55**

Appraisal Summary - GH beds	Net Present Cost £'000		Equivalent Annual Cost £'000	
	Option 1	Option 2	Option 1	Option 2
Cost Per Benefit Point	**575.66**	**642.84**	**21.71**	**24.24**

Appraisal Summary - LRI beds	Option 1	Option 3	Option 5	Option 6	Option 9
Cost Per Benefit Point	**1,111**	**1,170**	**1,190**	**1,267**	**1,016**

The preferred option for each scheme is:

Table 7 - Preferred Option for Each Scheme

Scheme	Preferred Option	
ICU Extension	Option 3	A new build expansion into Bay B, increasing the size of the existing unit.
Interventional Radiology	Option D1	Conversion of Medical Records and Office space, adjacent to existing Imaging space at GH
GH Beds	Option 1	New build development situated on a newly developed Third Floor at GH above wards 24,25 and 26
LRI Beds	Option 9	Ward 15, 16 and 21 refurbishment at LRI

1.4 Quality Case

The clinical leadership and engagement of clinicians has been fundamental through the life of the project to date and will continue through to the operational commissioning of the new facilities. They have supported the achievement of a design solution which satisfies national best practice guidance and standards, and improves the quality of patient, family and staff experience; whilst delivering a cost effective solution.

Engagement with stakeholders is essential to the success of the scheme, particularly patients, commissioners, GPs and internal clinical and non-clinical support services which are critical to the delivery of services.

Services have developed comprehensive Clinical Operational Polices which describe how the services will function and with particular reference to patient flows. These documents provide the detail of the functional content required in the new facilities and have been used to develop the Schedules of Accommodation on which the designs are based. Standards provided within the Healthcare Building Notes (HBNs) have been adhered to as closely as possible; derogations against these standards have only been made when necessary, particularly with regard to space constraints, and with the support and agreement of clinical and infection prevention colleagues.

Improving the patient experience is a determinative factor in ensuring the success of the project and the design of the new facilities will embody key solutions which will deliver this:

- Improving privacy and dignity in providing larger bed spaces, en-suite toilet and bathroom facilities, provision of day spaces within bays;
- Use of colour and signage to help provide a dementia friendly environment;
- Lighting strategies.

The provision and consolidation of staffing across two sites is a considerable qualitative and quantitative benefit from a staffing perspective, in particular from a medical and diagnostic standpoint and ultimately supports workforce efficiencies across all disciplines. Some of the greatest challenges are supporting the interim arrangements however, which means that some of the benefits will not be realised until the long term critical care model is fully implemented. Developing the OBC has given the opportunity to develop innovation and support new ways of working and there has been a particular focus on training and education which in turn supports enhanced attraction and retention. New build and refurbished clinical environments will also aid recruitment and retention and will continue to be monitored by staff surveys and professional surveys internally and externally.

1.5 Commercial Case

The Trust has developed a procurement strategy for the project which reflects the individual nature of each of the schemes.

Table 8 - Preferred Procurement Options

Scheme	Procurement Route	Reason for Selection
GH: 11 bed extension to ICU	Traditional tender	This scheme was tendered in 2015 therefore requires minimal refreshing
GH: New build Modular Wards	Selection of a contractor from the 'Shared Business Service' framework.	Design and build by a specialist bespoke modular contractor will deliver Value For Money (VFM) and can be achieved to our timescales.
GH: Interventional Radiology (IR)	Traditional tender	Worked up to Guaranteed Maximum Price (GMP) under a previous framework with Interserve Construction*. Tender will now achieve best VFM.
LRI: General Surgery Ward	Traditional tender to local Small and Medium Enterprises	This method of procurement will enable us to build on lessons learned during 5 most recent ward refurbishments and deliver VFM through repeatable procurement.

* Previous major capital projects delivered by the Trust were procured utilising UHL's bespoke lot2 framework, which was awarded to Interserve Construction following an OJEU tender. This framework has now expired.

The Trust will be undertaking design quality assessment with the use of a recognised toolkit to ensure a well-designed solution. The Trust will track design quality at key stages of the development. This assessment is fundamental in contribution to an improved design, long term functionality and sustainability of the schemes.

1.6.1 Design Quality Indicator Review

When the Interventional Radiology (IR) rooms and the ICU extension were designed to FBC level in 2015, a formal design assessment was not undertaken, and there is no perceived added advantage at this stage of completing this assessment for these elements of the project. This view has been validated by the NHSE Projects Assurance Unit (PAU) in pre-business case discussions. However, the principles of the Design Quality Indicator (DQI) review were applied during the design process. There is a wealth of evidence that demonstrates the positive impact that the environment can have on patient recovery. The Trust remains confident the design of these facilities will offer a high quality environment which will have a positive impact on clinical outcomes e.g. well-being, recovery rates, reduced infection rates, improved patient flow and enhanced privacy and dignity.

While the principles of the DQI will be strived for, it will be very difficult to address the requirements in full due to the minor refurbishment scope of the wards at LRI. None the less, patient flow will be enhanced, as will privacy and dignity and the patient environment.

The new build wards at GH will have a formal design review which will be undertaken before the FBC is submitted.

1.6 Financial Case

The Financial Case examines the affordability of the preferred options and sets out the financial implications for the Trust in terms of capital expenditure and cash flow, the income and expenditure account and borrowing.

The financial position of this OBC shows there will be an additional cost of £3.15 million per annum recurrently until the Trust reconfigures on to two sites, when the additional cost reduces to £1.2 million. The recurrent additional cost will be offset by savings from reconfiguration when the reconfiguration of LGH concludes and its associated infrastructure costs are removed.

1.7.1 Capital Cost

The other major cost element is the capital costs. The capital itself has been assumed to be funded through Interim Capital Support Loan (ICSL). The revenue consequences represent the interest on the loan provided and depreciation. It has been assumed that refurbishment costs do not add to the value of the existing asset and depreciation has been assumed on the new build construction costs and equipment. An average asset life of 40 years has been assumed for buildings and 15 years for equipment. The assumption of 15 years for equipment allows for the fact that some equipment will reflect the fabric of the building and include fixtures and fittings which will have a longer asset life than medical equipment.

Table 9 - Summary of Capital Costs

Element	Total £
Works cost	21,323,399
Fees	2,823,120
Equipment Cost	2,781,629
Planning Contingency	1,726,496
Optimism Bias	2,143,939
Total for Approval Purposes	**30,798,583**

1.7.2 Revenue Costs

Table 10 - Financial Position of this Outline Business Case

Impact on Income and Expenditure	2017/18 £'000	2018/19 £'000	2019/20 £'000	2020/21 £'000	2021/22 £'000	2022/23 £'000	2023/24 £'000
ICU	0	0	678	924	924	924	299
IR	0	57	572	627	627	627	287
Glenfield Beds	0	0	291	376	376	376	-55
LRI Beds	0	0	404	521	521	521	-33
Total Additional Operating Costs	**0**	**57**	**1,945**	**2,449**	**2,449**	**2,449**	**499**

Impact on Income and Expenditure	2017/18 £'000	2018/19 £'000	2019/20 £'000	2020/21 £'000	2021/22 £'000	2022/23 £'000	2023/24 £'000
Capital Charges:							
Depreciation	0	0	437	583	583	583	583
Interest	6	266	522	526	504	482	461
Return on Assets	0	0	(429)	(406)	(384)	(361)	(338)
Total Capital Charges	6	266	530	702	703	704	705
Total Impact on I&E	**6**	**323**	**2,475**	**3,150**	**3,151**	**3,152**	**1,204**

Table 11 - Capital Charge Impact of Scheme (ICSL)

Critical Care Capital Charges	2017/18 £'000	2018/19 £'000	2019/20 £'000	2020/21 £'000	2021/22 £'000
Opening Balance		1,438	28,830	30,490	29,258
Drawdown	1,438	27,392	1,968		
Loan Repayments		0	-308	-1,232	-1,232
Closing loan	1,438	28,830	30,490	29,258	28,026
Interest on loan (14 October 2017 rate 1.76%)	6	266	522	526	504
Return on Asset	0	0	(429)	(406)	(384)
Depreciation	0	0	437	583	583
Total Capital Charges and interest	**6**	**266**	**522**	**526**	**504**

1.7.3 Affordability

The scheme identifies increases in recurrent revenue costs aside from capital charges and interest payments on the loan funding. All the workforce costs identified are viewed to be non-recurrent and will not be incurred after the Trust consolidates its acute services onto two sites.

The Trust Financial Strategy, approved by the Trust Board in November 2017, assumes that the operating cost impact of site reconfiguration will be zero and the non-operating costs impact will be as per the capital programme.

Therefore, if the Trust is to maintain the deficit reduction trajectory in the Financial Strategy, the operating cost revenue impact of this development is only affordable if either:

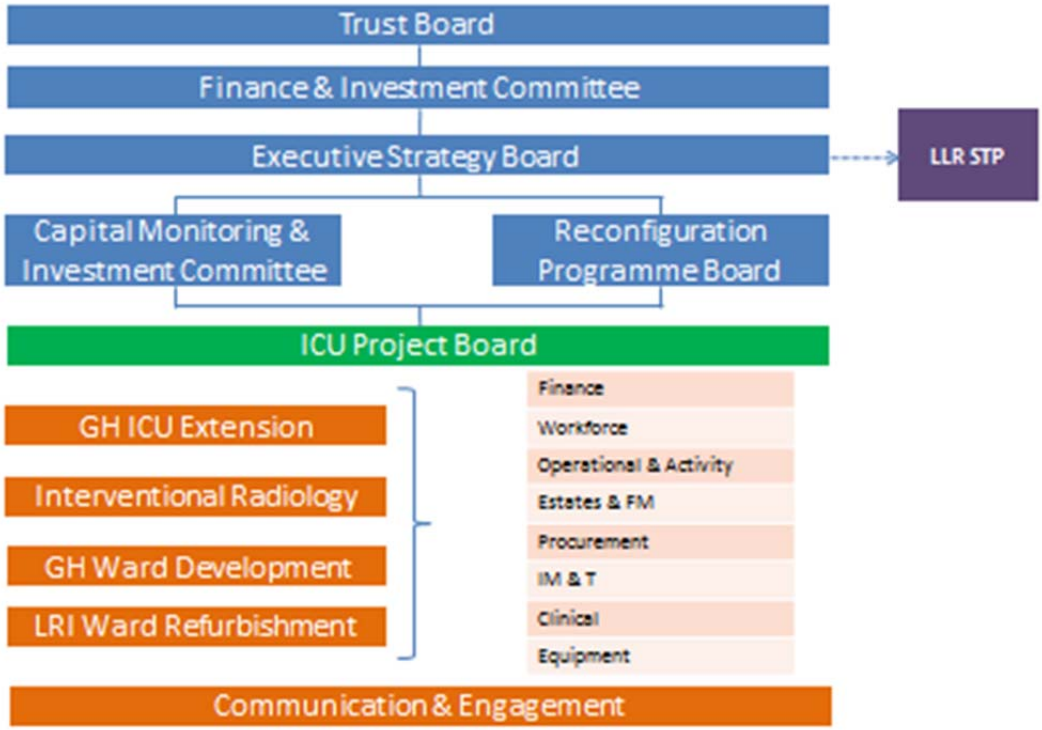
- Cost Improvement Plan (CIP) targets are increased to offset these costs; or
- Transitional income is secured to offset these costs; or
- The development is funded by the circa £5.0m per annum allowance made in the Financial Strategy for annual operating cost pressures.

1.7 Management Case

There is a robust governance structure established for the management of the project within the Trust, which also links to the LLR Sustainability and Transformation Partnership (STP), which is outlined in Figure 3 below.

Membership of the Project Board incorporates the key work-stream areas to deliver the project together with Commissioner and patient representation. The Deputy Medical Director and Integrated Services Programme Lead are joint Senior Responsible Officers (SRO).

Figure 3 - Trust Capital Governance Framework



The high level programme to deliver the project summarises the key milestones for delivery, which are included in the table below:

Table 12 - Project Programme

Milestone Activity	ICU Extension GH	New Build Wards GH	IR GH	Ward Refurb LRI
Pre-planning Consultation	n/a	Oct 2017	n/a	n/a
Trust Board approval of OBC	Nov 2017	Nov 2017	Nov 2017	Nov 2017
Full Submission of Planning Application	Submitted and received	Nov 2017	n/a	n/a
Trust Board approval of FBC	Feb 2018	Feb 2018	Feb 2018	Feb 2018
Planning Approval	Submitted and received	Jan 2018	n/a	n/a
Tender procurement construction works	Feb 2018	n/a	Feb 2018	Feb 2018

Milestone Activity	ICU Extension GH	New Build Wards GH	IR GH	Ward Refurb LRI
GMP received from Construction Partner	n/a	Feb 2018	n/a	n/a
NHSI FBC Approval	Apr 2018	Apr 2018	Apr 2018	Apr 2018
Award Enabling Works contract	n/a	n/a	Apr 2018	n/a
Commencement of Enabling Works	n/a	n/a	May 2018	n/a
Completion of Enabling Works	n/a	n/a	Jul 2018	n/a
Operational Commissioning and go live of Enabling works	n/a	n/a	Aug 2019	n/a
Award Construction Contracts	Apr 2018	Apr 2018	Jul 2018	Apr 2018
Commencement of construction	May 2018	May 2018	Sept 2018	May 2018
Construction complete	Feb 2019	Jul 2019	Apr 2019	Oct 2018
Operational Commissioning and go live	Mar 2019	Aug 2019	May 2019	Nov 2018

The delivery of the benefits associated with the project will be managed through the Project Board. The Benefits Realisation Plan sets out the benefits to be achieved by each service together with who is responsible for their delivery, when they will be delivered and how achievement of these will be measured. The Benefits Realisation Plan will be further developed moving towards the FBC.

The Project Board has undertaken a comprehensive risk assessment to identify the major areas of risk and highlighted the controls currently in place, or to be put in place, to mitigate the risks. The risk register will be reviewed and updated routinely as the project develops, with significant risks being highlighted for escalation to the Reconfiguration Programme Board.

The outline arrangements for Post Project Evaluation have been established in accordance with best practice, and have taken account of the Trust's learning from its recent Emergency Floor and Vascular capital projects. The Trust is committed to ensuring that a thorough and robust Post Project Evaluation is undertaken at key stages in the process to ensure positive lessons can be learned from the project and from other projects that can inform the process undertaken.

1.8 Conclusion

This OBC is for the first stage reconfiguration of elements of the ICU currently located at LGH of UHL.

The need to move Level 3 ICU away from LGH was first identified in 2014 owing to the increasing risk of clinical sustainability of the service at that site, the risk continues to be managed through a series of mitigations, but remains a key risk for the Trust.

This OBC will support the delivery of a sustainable Level 3 ICU service across the Trust, and provides the next stage delivery of the Trust's long term Reconfiguration Programme to consolidate acute services on two sites. This consolidation will eliminate the duplication, sometimes triplication of services, which is an inefficient model of service delivery. Clinical resources can currently be spread too thinly making services operationally unstable.

The increase in revenue costs that this OBC incorporates reflect the inefficiencies, associated with on-going service delivery at LGH, that will continue to exist until the consolidation of acute services at LRI and GH is completed. The additional revenue costs will be negated at this point.

2. The Strategic Case

2.1 Structure and Content of the Document

The OBC has been prepared using the agreed standards and format for business cases, as set out in Department of Health guidance and HM Treasury Green Book.

The approved format is the Six Case Model, which comprises the following key components:

- The **strategic case** section. This sets out the case for change, together with the supporting investment objectives for the scheme;
- The **economic case** section. This demonstrates that the organisation has selected the most economically advantageous offer, which best meets the existing and future needs of the service and optimises value for money (VFM);
- The **quality case** section. This demonstrates that the organisation has considered the investment from a clinical quality, workforce, patient safety and patient experience perspective, and has engaged with key stakeholders for the benefit of patients, the public and the wider health community;
- The **commercial case** section. This sets out the content of the proposed procurement method;
- The **financial case** section. This confirms funding arrangements, affordability and the effect on the balance sheet of the organisation;
- The **management case** section. This details the plans for the successful delivery of the scheme to cost, time and quality.

2.2 Introduction

The Leicester, Leicestershire and Rutland (LLR) Sustainability and Transformation Partnership (STP) sets out the actions that are needed across the health and care system over the next five years in order to improve health outcomes for patients and ensure our services are safe and high quality, within the financial resources available. The STP identifies the essential need for University Hospitals of Leicester NHS Trust (hereafter referred to as “UHL” or “the Trust”) to consolidate onto two acute sites to deliver its clinical reconfiguration strategy, whilst enabling the disposal of the majority of the Leicester General Hospital (LGH) site which is directly linked to returning the Trust to financial balance.

The capital requirement to enable this consolidation is £397.5m. This forms the basis of UHL’s bid for capital from the 2017 Autumn Budget. The total capital requirement includes £30.8m which has been supported from the 2017 Spring Budget (Appendix 1 and 2) to allow Level 3 Intensive Care and all dependent services to be moved away from LGH.

This Outline Business Case (OBC) supports the requirement of £30.8m for the first stage reconfiguration of elements of the Intensive Care Unit (ICU) currently located at LGH.

It proposes to transfer current Level 3 adult critical care activity, and associated dependent services, to the Leicester Royal Infirmary (LRI) and the Glenfield Hospital (GH), whilst retaining a reduced Level 2 service only at LGH.

This OBC relates to the following schemes required to deliver this:

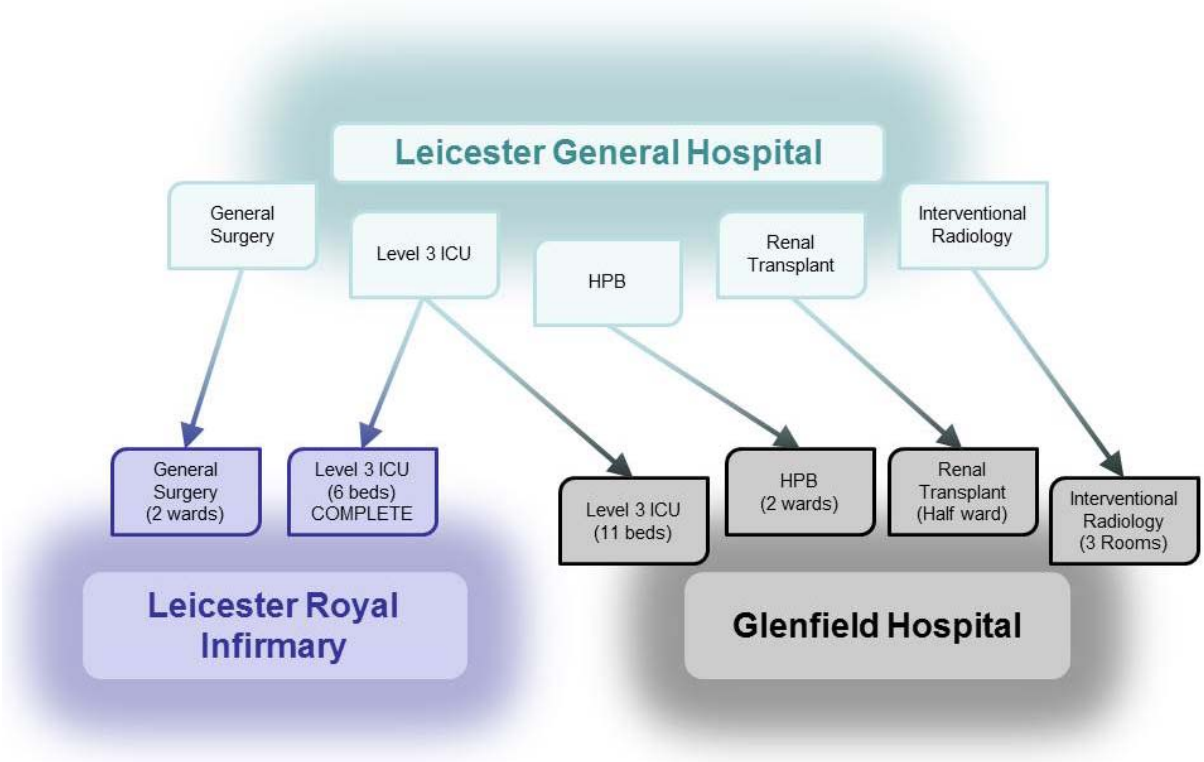
- The expansion of ICU at GH by 11 bed spaces;
- The refurbishment of space at GH for the development of interventional radiology facilities;
- The development of new wards at GH to support the transfer of HPB and transplant services from LGH;
- The refurbishment of ward space at LRI to support the transfer of colorectal and emergency general surgery services from LGH.

The ICU at LRI was expanded by six beds in 2015 into the theatre recovery area from the Trust's internal Capital Resource Limit (CRL) as the first step in the programme to consolidate services; and is therefore excluded from this OBC.

This case represents the next stage within the Trust's overall Reconfiguration Programme and Estates Strategy. The move of vascular services from LRI to GH in May 2017 released clinical space at LRI to allow subsequent service moves to take place.

The scheme is a key enabler for the long term plan, but provides the solution to the risks identified in the Trust's ability to provide Level 3 ICU from all three acute sites on an on-going basis.

Figure 4 - Key service relocations



2.2.1 Commissioner Support from NHSE and LLR CCGs

This OBC is founded on the transfer of existing activity levels from the impacted services (ICU, HPB, transplant, colorectal, emergency general surgery) to their new sites. No assumption has been made in relation to any future expansion or growth of these services.

The long term reconfiguration solution captures assumptions in relation to the impact of demographic changes across all services and delivers the modelled, required acute bed numbers outlined in the STP. However, in the longer term reconfiguration solution, UHL will respond to the assumptions in relation to demographic changes captured in the STP. This will be incorporated in future business cases. The schemes have been validated with reference to the bed numbers upon which the revised estates strategy and Development Control Plan (DCP) (to be included in FBC) will be based.

This OBC is an integral part of the LLR STP which is supported by all health partners within LLR. Commissioner support has been received from both NHSE and LLR CCGs, and is attached at Appendix 3 and 4. These confirm their understanding that there is no planned increase in activity associated with this case or financial implications outside or normal commissioning arrangements.

2.3 Organisation Overview

UHL is one of the biggest and busiest NHS Trusts in the country**,** serving the one million residents of Leicester, Leicestershire and Rutland – and increasingly specialist services to a much wider area. The Trust provides nationally and internationally-renowned specialist treatment and services in cardio-respiratory diseases, extracorporeal membrane oxygenation (ECMO), cancer, vascular and renal disorders to reach a further two to three million patients from the rest of the country.

UHL provides services from three sites the Leicester General (LGH), Glenfield Hospital (GH) and the Leicester Royal Infirmary (LRI) hospitals. The Trust works closely with partners at the University of Leicester and De Montfort University providing world-class teaching to nurture and develop the next generation of doctors, nurses and other healthcare professionals, many of whom go on to spend their working lives with the Trust.

UHL continues to work with many different organisations throughout the world to push the boundaries of research and develop new surgical procedures for the benefit of our patients; with around 1,000 clinical trials taking place every year. The Trust is now home to a National Institute for Health Research (NIHR) Biomedical Research Centre which supports key research including lifestyle, diabetes, and cardio-respiratory diseases, and for the first time the Trust has been successfully designated as an NIHR Clinical Research Facility. UHL is extremely proud to have an Experimental Cancer Medicine Centre and the Hope Unit is an instrumental factor in delivering clinical trials of new cancer treatments, and is generously supported by the locally-based charity Hope Against Cancer.

The Trust is providing access to cutting edge genetic medicine for our patients by participating in the 100,000 Genomes Project. All of this means that thousands of UHL patients are amongst the first to try the latest medicines and techniques.

The heart centre at GH continues to lead the way in developing new and innovative research and techniques, such as Trans-Catheter Aortic Valve Insertion (TAVI) and the use of the sutureless valve in heart surgery. It has also become one of the world's busiest ECMO centres and the only hospital in the UK to provide mobile ECMO therapy for both adults and children.

UHL has one of the best vascular services nationally, with more patients surviving longer following an aneurysm repair. The move of the vascular service from the LRI to GH provided new state of the art facilities including a hybrid theatre, enabling the development of joint working practices with cardiac surgery and cardiology to treat patients with complex cardiovascular disease.

UHL is also proud to continue to have some of the lowest rates of hospital-acquired infections, such as C.difficile and MRSA, in the country.

2.3.1 Clinical Management

Clinical Management within the Trust is provided by seven Clinical Management Groups (CMGs). All seven CMGs are affected by the proposed development outlined within this OBC, they are:

- Intensive Care, Anaesthesia, Pain and Sleep (ITAPs);
- Clinical Support and Imaging (CSI);
- Emergency and Specialist Medicine (ESM);
- Musculoskeletal and Specialist Surgery (MSS);
- Renal, Respiratory, Cardiac and Vascular (RRCV);
- Women's and Children's (W&C);
- Cancer, Haematology, Urology, Gastroenterology and General Surgery (CHUGGs).

Each CMG is led by a triumvirate of Clinical Director, Head of Operations and Head of Nursing; with a structure below it of services led by specialty Heads of Service, General Managers and Matrons.

Our annual operating revenue in 2016/17 was £924.3m. In 2016/17 UHL over achieved against its Cost Improvement Programme (CIP) of £35.0m through the following:

- Treating more patients via more productive theatres, outpatients and beds;
- Reducing the price paid for goods and services;
- Removing waste and eliminating unnecessary variation in our patients' pathways.

Part A: The Case for Change

2.4 Clinical Drivers for Change

There is a widely recognised and well-articulated need to consolidate acute services in Leicester, which are currently spread across three sites. The current configuration is suboptimal in clinical, performance and financial terms. This is exemplified by the fact that ICU (and services that depend on ICU) are located on all three sites. The first step in the Reconfiguration Programme was delivered in May 2017 with the transfer of vascular services from LRI to GH; this entailed the development of a new hybrid theatre and establishment of a comprehensive integrated vascular, cardiology and cardiac surgery service providing the best possible care to our patients with cardiovascular disease. The scheme detailed in this OBC is the next key building block towards acute site consolidation and will bring significant clinical benefits for patients.

The Trust's five-year clinical strategy includes the need to deliver critical care services through the creation of two 'super ICUs' by 2022/23 located at LRI and GH; and allowing the separation of planned and emergency care. UHL currently provides an adult ICU service on each of its three sites (LGH, LRI and GH).

Triplication of services creates inefficiency and an unsustainable clinical position; the biggest risk being the lack of a suitably qualified workforce to maintain safe Level 3 ICU services across the three sites.

The continuing operational challenges faced by the provision of Level 3 ICU services at LGH include, fall into two key areas:

2.4.1 Workforce

- The reduced opportunities for critical care staff to gain adequate experience in providing care for the most ill patients has been affected by a reduction of Level 3 patients cared for at LGH;
- Changes in the way medical training for intensive care staff is structured has led to the removal of training designation status at the LGH unit and therefore the ability to place trainees at LGH;
- The retirement of experienced consultant grade staff from LGH;
- Recruitment to substantive posts at LGH has failed repeatedly as posts have become unattractive owing to the loss of training designation and the reduction in patient acuity;
- A national shortage of experienced critical care nursing and medical staff compounding recruitment problems.

A number of mitigations have been put in place by the ITAPS CMG to ensure the continued safe service provision at LGH during the development of this project. These include:

- Ensuring there is sufficient non-trainee middle grade medical cover in place to support safe provision of the Level 3 service;
- Changes in Consultant Anaesthetist job description;

- Appointment of internal locums to cover consultant vacancies;
- Consultants acting down on shifts to cover junior doctor rota deficits;
- Successful on-going recruitment process in a challenging market;
- The use of bank or agency staff for junior medical or nurse vacancies;
- On-going dialogue and engagement with clinicians over long-term strategic plans for intensive care;
- Cross CMG working to develop recruitment strategies for the future.

It must be noted that whilst these mitigations help to ensure the continued delivery of a safe service at LGH, the service remains unsustainable in the long term due to the uncertainty regarding the ability to deliver the mitigations beyond the lifetime of the project.

2.4.2 Capacity and Activity

There is also a capacity gap in ICU provision across UHL, resulting in cancellations in elective procedures (see Table 17) reliant on Level 2 and 3 care. The future strategy for ICU units at LRI and GH in the future will be to consolidate care for Level 2 and 3 patients into the 'super ICUs'. Aligned with this provision will be a robust cohort of beds for Level 1 care within specialties throughout the Trust, as well as critical care outreach services delivering a 24/7 service.

The first step in this journey is the move of Level 3 ICU and associated services dependent on Level 3 ICU from the LGH to the LRI and GH which will improve our ability to accommodate demand, reduce elective cancellations by separating emergency from elective work through the move of day case activity from LRI and GH to LGH, and improve cancer performance in line with national drivers to achieve 62 day and 31 day metrics. Currently UHL consistently struggles to deliver 31 days in several tumour site groups in part due to the lack of ITU/HDU capacity.

This scheme allows for:

- A transfer of commissioned Level 3 and associated activity from LGH to GH. The relocation of services to this site allows for efficiency of flow through a larger physical footprint;
- The move of Level 3 and associated activity to LRI, creating a single site surgical emergency take, which delivers a more efficient patient pathway.

Once the developments identified above have been delivered, it will be possible to move forward incrementally, as funds permit, ultimately achieving the objective of two "ICU-dependent" acute sites in Leicester. This is the key to the Trust's future clinical and financial sustainability and the achievement of key performance targets.

2.5 Background

The need to move Level 3 ICU away from LGH was first identified in 2014 owing to the increasing risk of clinical sustainability of the service as identified in section 2.4. At this stage, the project was split into discrete business cases, which were approved internally by the Trust in 2015.

This approach was supported at the time by the National Trust Development Authority (NTDA). Owing to the national lack of capital for NHS developments, external capital for this project has not been available to date.

UHL was then successful in its bid for funds for the move of Level 3 ICU away from LGH from the 2017 Spring Budget. Discussions with NHS Improvement (NHSI) and NHS England (NHSE) have concluded that UHL needs to submit a new OBC and FBC for the whole £30.8m value of the scheme.

2.5.1 Timeline of Project Development

This OBC therefore reflects a "refresh" of the Full Business Cases approved by the Trust's Board in December 2015; now updated with 2016/17 outturn as the baseline activity and financial year. The Models of care and Clinical Operational Policies have been reviewed and refreshed with clinical leads.

This OBC reflects a variant solution, compared to the approved FBCs, for the delivery of the beds required for HPB and Transplant at GH; the FBCs written in 2015 assumed the vacation of wards at GH to accommodate HPB services and the conversion of office accommodation to create a ward for Transplant. In 2015, capacity was expected to be created on the basis of beds being vacated due to a left shift of activity with the development of a programme called 'Intensive Care Support' which enhances the level of care available to patients in their own homes following an earlier discharge. Whilst this has improved quality of care for patients in their own homes, it has not resulted in a release of acute capacity. This element of the scheme for HPB and Transplant is now a new build ward solution. The new Transplant solution provides enhanced clinical adjacencies and better value for money compared to the original planned solution.

The timeline of decision making in relation to the development of the proposed reconfiguration is detailed in the table below:

Table 13 - Timeline of Decision Making

Date	Milestone
Nov 2014	**Confirmation of the Level of risk of sustainability of Level 3 ICU service at LGH.** Whilst there was a good quality and safe Level 3 ICU service at LGH, the Department of Critical Care Medicine (DCCM) had experienced medical staff recruitment and retention issues across all grades, which made it unviable to maintain the current level of critical care service in the future. This was been driven by: ➢ Reduced dependency required within the critical care patient population at LGH due to previous service moves at UHL. This restricted opportunities for critical care staff to maintain experience in providing care for the most critically ill patients and was a threat to the safety of the service in the near future;

Date	Milestone
	➢ Due to the acuity of patients, the middle grade rota at the unit at LGH could no longer be filled with suitable 'trainee' posts. The rota was therefore being filled by higher staff grades at an increased cost; ➢ Recruitment to substantive consultant intensivist posts at LGH had been attempted on multiple occasions but had failed, largely due to the loss of training designation and the reduction in patient acuity. A national shortage of experienced critical care nursing and medical staff (coupled with retirement of several existing experienced consultant staff) compounded recruitment problems. Initial concern reflected that, if the Level 3 ICU beds were not moved, intensive care would be forced to stop at LGH past July 2016. This would have had the immediate impact of UHL's ability to undertake Level 3 ICU dependant surgery at LGH and as such, surgery would have been stopped. The impact would be the need for patients requiring such procedures to travel out of county to other providers. This would have had an adverse impact on UHL's quality of care for patients, reputation and revenue.
Feb 2015	An option appraisal review was held in February 2015 involving representatives from all specialties and support services affected by the ICU Reconfiguration. The purpose of this meeting was to agree the immediate configuration of services across the three sites which would enable Level 3 adult critical care to re-locate from LGH by December 2015. A set of over-arching principles were agreed at the meeting which will govern the remainder of the project: ➢ Any part of a service that is dependent on Level 3 adult critical care must be re-located to LRI or GH; ➢ If the above results in parts of a services remaining that are so small as to be destabilised then these parts must also move or have a robust interim solution; ➢ Any services at LRI and GH that do not require Level 3 adult critical care and can move to LGH to free up the estate footprint must consider moving.
Mar 2015	A presentation was made to the LLR Overview and Scrutiny Committees regarding the future of intensive care at UHL; support was given to proceed with the plan to consolidate Level 3 ICU beds at LRI and GH.
Jul 2015	The move of vascular services from LRI to GH was identified as a key enabler for the Intensive Care project as it vacated space at LRI. The vascular move, originally planned for **April 2016** created an interim cost pressure, for two months, particularly in relation to ITU and anaesthetic medical staffing rotas, until such point as Renal / HPB Services transfer to GH. At this stage the implementation of the Interim ICU project was assumed to take place in **July 2016**. The Trust Board then approved the Vascular Business Cases, supporting the developments from the Trust's CRL: ➢ Hybrid theatre; ➢ Vascular ward; ➢ Vascular Studies Unit (VSU) and angiography. The aim of the vascular project was to create a cutting edge and comprehensive centre for cardio-vascular medicine and research on a single site at GH to transform the scope and quality of vascular service for both patients and staff; and support the Trust's ambition to be recognised as a Level One regional centre for complex endovascular services.
Aug 2015	The Trust Board approved the LRI ICU Expansion in support of the move of Level 3 ICU away from LGH, at a capital cost of £717k funded from Trust CRL. This case delivered the short term solutions for LRI, in converting vacated recovery space to a six bedded ICU facility. This provided an expansion of capacity at LRI to accommodate service moves from LGH. It also provided the solution at GH to mitigate the reduction in ICU beds whilst the interim ICU scheme construction took place through the

Date	Milestone
	conversion of six beds on Ward 34 to ICU bed spaces.
Aug 2015	The vascular construction commenced.
Dec 2015	The LRI interim ICU expansion completed, creating a 6 bed annex.
Dec 2015	The Trust Board approved the interim ICU Full Business Cases: ➢ ICU expansion at GH; ➢ Imaging enabling works at GH; ➢ LRI Beds – refurbishment of Wards 7 and 21; ➢ GH Beds – refurbishment of Wards 28 and 29 when vacated by efficiencies due to reduced length of stay and transfer of pathways to community settings. These business cases supported the transfer of Level 3 ICU and associated clinical services from LGH to GH and LRI. Hepatobiliary (HPB) and transplant to move to GH and colorectal and emergency general surgery to LRI. Planned Level 3 ICU activity associated with remaining services at LGH (orthopaedics, gynaecology, urology) would also be transferred to either LRI or GH and a retrieval service would be established for unplanned Level 3 patients at LGH.
Dec 2015	Access to capital resource was limited for the Trust with a number of competing priorities leading to a slowdown of vascular construction.
Apr 2016	Vascular construction recommenced funded from Trust CRL. Plans for the Interim ICU project were put on hold, due to lack of capital availability and inability to fund this from Trust CRL.
Aug 2016	The additional revenue consequences of the separation of vascular and ICU development, beyond the original 2 month period, outlined in both the vascular and interim ICU Business Cases were agreed by the Executive team.
Aug 2016	It was recognised, linked to the development of the STP, that the GH bed solution, of vacating Wards 28 and 29, to support the move of HPB from LGH was not deliverable. Plans were developed for the solution to be via the new build at GH of 2 wards.
Mar 2017	As part of the Spring Budget 2017 capital bid, a review of the solutions confirmed that Transplant should be delivered as an additional new build ward.
Apr 2017	A bid for STP capital funding was made from the Spring Budget 2017 for the Interim ICU scheme, with new build ward solution for GH included.
May 2017	The vascular service moved from LRI to GH.
Jul 2017	National support for £30.8m bid was confirmed by the Department of Health in their letter of 19th July 2017, as found at Appendix 1.
Aug 2017	A letter identifying how the capital would be accessed was received from NHS Improvement on 25th August, and can be found at Appendix 2. It was agreed that a single OBC, followed by FBC would be submitted in order to access this funding.

Owing to the project history as outlined above, some of the level of detail contained within this OBC is as expected in an FBC, since key elements of this case remain unchanged from the original plan, as approved in the 2015 FBCs, namely the ICU expansion and the interventional radiology suite at GH.

2.6 Investment Objectives

Whilst providing a safe service at present, the LGH Department of Critical Care Medicine (DCCM) has experienced medical staff recruitment and retention issues across all grades, which make it unviable to maintain the current level of critical care service provision at LGH in the future.

The key investment objectives for this project, as outlined in the original Full Business Cases, are as follows:

- To provide a solution that maximises clinical quality and safety;
- To deliver, at the earliest possible opportunity, a sustainable Level 3 ICU service across the Trust;
- To deliver an ICU solution that facilitates recruitment and enables the delivery of high levels of teaching and training;
- To ensure that the quality of the patient environment and experience remains a priority;
- To provide a solution which fits with future Trust Reconfiguration Programme and is consistent with the Development Control Plan (DCP);
- To deliver a solution that ensures accessibility to services and maximises clinical adjacencies and efficiency.

Part B: The Strategic Context

2.7 Business Strategies

2.7.1 National Strategies, Programmes and Policies

Key national strategies, programmes and policies relevant to this project are summarised below:

Table 14 - National Strategies, Programmes and Policies

Component	Aims
DH report, "Comprehensive Critical Care: a Review of Adult Critical Care Services" – 2000	The report recommends the establishment of adult critical care networks. (It was published in response to national concerns regarding critical care capacity, equity of access and quality of care).
National Adult Critical Care Stakeholder Forum document, "Quality Critical Care – Beyond Comprehensive Critical Care" - 2005	The document recommends that "critical care networks be retained, strengthened and fully developed in line with local priorities and needs".
National Imaging Board and DH, "Interventional Radiology - Guidance for Service Delivery" - 2010	The document provides a summary of the evidence base for how comprehensive Interventional Radiology (IR) services can contribute to the outcomes, safety and experience for patients who present with relevant emergency and planned care conditions. An effective well-resourced IR service can contribute to significant efficiencies in care pathways in planned and emergency care.
Operational Delivery Networks (ODN) established 1st April 2013	From the 1st April 2013 adult critical care services across NHS England have been required to be delivered through integrated Operational Delivery Networks (ODN) with services delivered across providers in a pre-determined geographical area.
Intensive Care Society Core Standards for ICUs 2013	These standards apply to all units capable of looking after Level 2 or Level 3 critically ill patients, whether they are called Intensive Care, Critical Care, or Hugh Dependency Unit and no distinction is made between them. The standards incorporate those for staffing (medical, nursing, therapy team, pharmacy and dieticians), operational, equipment and data collection.
NHS England Service Specification No. D16 Adult Critical Care - 2014	The Specification states that co-located Services – to be provided on the same site and to be immediately available 24/7: ➢ Competent resident medical practitioner with advanced airway skills (Anaesthetist / Intensive Care Medicine); ➢ General Internal Medicine; ➢ Endoscopy; ➢ Radiology: CT, Ultrasound, plain x-ray; ➢ Echocardiography / ECG;

Component	Aims
	➢ General Surgery for any site with unselected medical admissions; ➢ Access to Theatres; ➢ Transfusion Services; ➢ Essential haematology/biochemistry service and point of care service; ➢ Speciality Intensive Care Units must have their speciality specific surgical service co-located with other interdependent services e.g. vascular surgery with interventional vascular radiology, nephrology and interventional cardiology; obstetrics with general surgery; ➢ Informatics support; ➢ Physiotherapy; ➢ Pharmacy; Medical Engineering Services.
Faculty of Intensive Care Medicine (FICM) and the Intensive Care Society, "Guidelines for the provision of intensive care services" - 2015	The guidelines include the following guidance pertinent to this OBC: **"Interactions with other services"** Intensive Care Medicine presents an interesting paradox. It owns few, if any, unique therapies or interventions; it has an impressive track record of negative clinical trials; and yet … there has been an inexorable improvement in case-mix adjusted mortality rates from critical illness over the years. Broad inspection of the research literature suggests that most gains are to be made from interventions which facilitate earlier diagnosis and treatment, minimise the harmful effects of organ support, enhance communication, and promote a proactive system-wide approach to the care of patients at risk of critical illness. The 'art' of intensive care therefore lies more in integrating multi-professional care and complex interventions over time, across locations and between teams, than in the delivery of any single treatment. Consequently, intensivists must be systems experts, both in terms of physiology and of healthcare delivery. Interaction with 'other services' starts with the multi-professional teams in the Intensive Care unit: doctors, nurses, advanced Critical Care practitioners, physiotherapists, dieticians, infection control and microbiology, and pharmacists; with further input by occupational therapy, speech and language therapy, and clinical psychology. The morning and evening rounds are key opportunities to draw together information about the patients, to establish daily goals and determine main risks and communication tasks, using a standardised data collection sheet or an electronic equivalent. Given the size of the ICU team, and the impact of staff rotations and shift-working, it helps cohesion and flattens hierarchies if the morning round starts with each member introducing themselves by name and rank, including the consultants. Interaction with microbiology is best conducted with relevant laboratory data available and at a consistent time each day. The appropriateness, dose, and duration of antimicrobial therapies may be reviewed, together with the ecology of the ICU, screening practices, and patterns of resistance. Ideally a senior member of the nursing staff should also be present. The timing of interactions with visiting medical or surgical teams will need to accommodate their other commitments. One approach is to establish, as a routine, a brief early morning case review with a trainee member of the visiting team (to determine dischargeability for example) which may then be followed

Component	Aims
	in the middle of the day by consultant-to-consultant discussion, informed by available laboratory or imaging tests. Continuity of care between teams and over time is essential. Radiological investigations should be planned in discussion with the radiologist performing the procedure. Ideally the consultant intensivist should review imaging results directly with the radiologist rather than receiving the report at a later stage, particularly if interventional radiology is a possibility."
Getting It Right First Time (GIRFT) Programme National Specialty Report, "General Surgery" - 2015	This report provides a series of recommendations that offer opportunities enhance patient's experience of care, improve patient outcomes and reduce post-surgical complications, while delivering tangible savings to Trusts. The recommendations include suggestions that could reduce length of stay, cut readmissions and save costs in the procuring of supplies.
Lord Carter Report June 2015: "Operational Productivity and Performance in English NHS acute hospitals: unwanted variation"	This review looked at productivity and efficiency in non-specialist acute hospitals using a series of metrics and benchmarks. The review concluded that there is significant unwarranted variation across all of the main resource areas, and no one hospital is good at everything. The report makes recommendations designed to tackle the variation and help Trusts improve their performance to match the best.
Sir Robert Naylor review March 2017: "NHS Property y and Estates: why the estate matters for patients.	This report calls for the NHS, through the STP process, to rapidly develop robust capital plans which are aligned with clinical strategies, maximise value for money (including land sales) and address backlog maintenance. It confirms that the NHS estate is one of the key enablers to change in the health system and directly contributes to the delivery of high quality healthcare to patients.

2.7.2 Key Regional Strategies

Joint Strategic Needs Assessment (JSNA) Leicester, Leicestershire and Rutland

A Joint Strategic Needs Assessment (JSNA) is a statutory requirement (Health and Social Care Act 2012) placed upon the Directors of Public Health, Adult and Children's Services in all local authorities to guide the commissioning of local heath, well-being and social care services. The JSNA provides a systematic method for reviewing the short and long term health and well-being needs of a local population. This JSNA is an important starting point for strategy development and commissioning decisions.

UHL predominantly provides services for the populations of Leicester, Leicestershire and Rutland - each have a JSNA last updated in 2015, to address the needs of the population and future demographic changes.

As people grow older, there is a higher prevalence of long term illness and disability. The number of people living with long term conditions will grow as a population ages. Furthermore, many people will have multiple conditions, meaning their care needs are more complex. From a health need perspective there is a marked variation in life expectancy across LLR with the main factors contributing to mortality being cardiovascular disease (CVD) and respiratory. Any plans for service improvement must respond to these challenges and make a significant contribution towards better outcomes.

Extracts from the Leicester City, Leicestershire and Rutland JSNAs are shown below:

Figure 5 - Leicester City JSNA extract

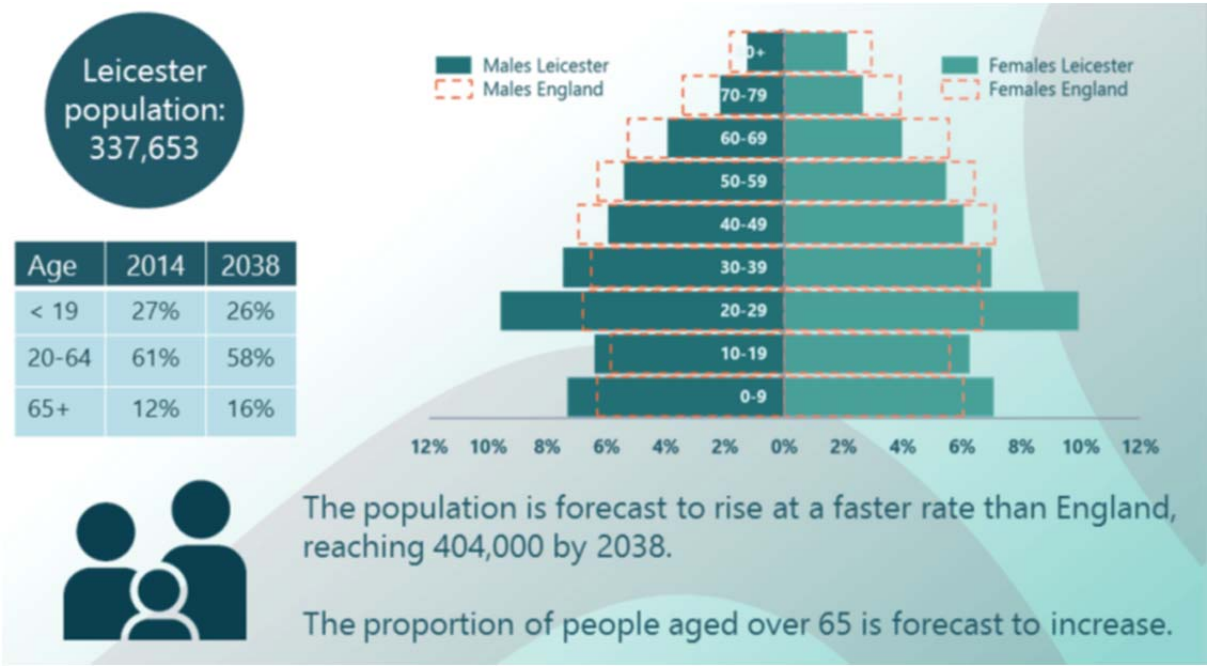


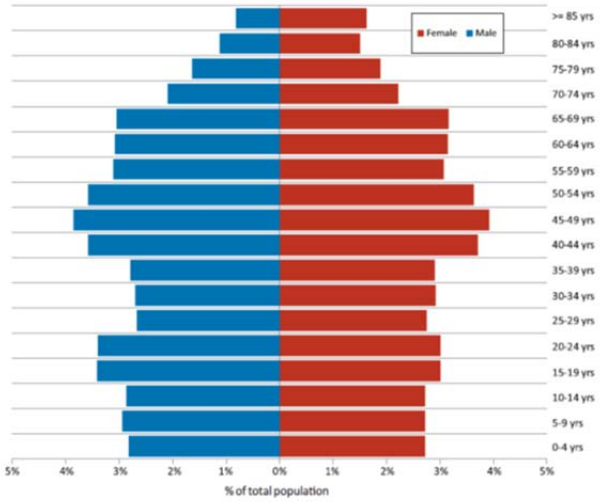
Figure 6 - Leicestershire JSNA extract

The 2015 JSNA Priorities

The most significant driver of health needs for the Leicestershire population is the growing older population.

In 2013, the total population for Leicestershire were an estimated 661,600 people. 126,100 people were estimated to be 65 years and over, and 33,400 were 85 years and over. 153,200 of the Leicestershire population were under 20 years of age.

Figure 5: Mid 2013 Population Estimates for Leicestershire



2013 population – 661,600 people

Over 85 years – 33,400

Over 65 years – 126,100

0-19 years – 153,200

Source: Office of National Statistics © Crown Copyright 2014

The population of Leicestershire is growing – between 2012 and 2037 (25 years) it has been projected that the total population of Leicestershire will grow by 15% to over 750,000. However, this growth is not uniform across the age groups with a projected increase of:

- 190% increase in people aged 85 years and over;
- 56% increase in people aged 65-84 years;
- 7% increase in children and young people aged 0-24 years; and
- A 2% decrease in the working age population (25-64 years).

Improving the health and wellbeing of working age adults:

- prevention in this population is essential for a healthy older population;
- continue to reduce premature mortality from the major causes of ill health;
- reduce inequalities in health across the social gradient;
- reduce the preventable risks to health through people's lifestyle choices; and
- maximising independence for those with long term and/ or complex needs.

Supporting the ageing population:

- early identification and support for people who are at risk of developing health and social care needs;
- more development of the evidence base around prevention for older people;
- supporting older carers;
- supporting people at the end of their life;
- supporting more people to look after themselves after illness or injury through reablement services; and
- planning for the future, including future housing needs, developing community assets, planning for emergencies.

Figure 7 - Rutland JSNA Extract

The population of Rutland as at the 2013 mid-year estimate was 37,600, comprising 19,200 males and 18,400 females.

Rutland is one of the most affluent counties in England; of 149 Upper Tier Local Authorities in 2010, Rutland ranked 148 (with 1 being the most deprived, and 149 being the least deprived) (Indices of Deprivation: 2010 by County Council). In the last three years of Health Profiles released by Public Health England (2013-15), Rutland has ranked first in the 10 best performing local authority districts for levels of deprivation. At a more granular level, there is variation across Rutland in levels of income deprivation. In 2010, when placed in a national context, while there were no wards that ranked in the two most deprived quintiles nationally, two wards were in the middle quintile – Uppingham and Oakham North West (see below).

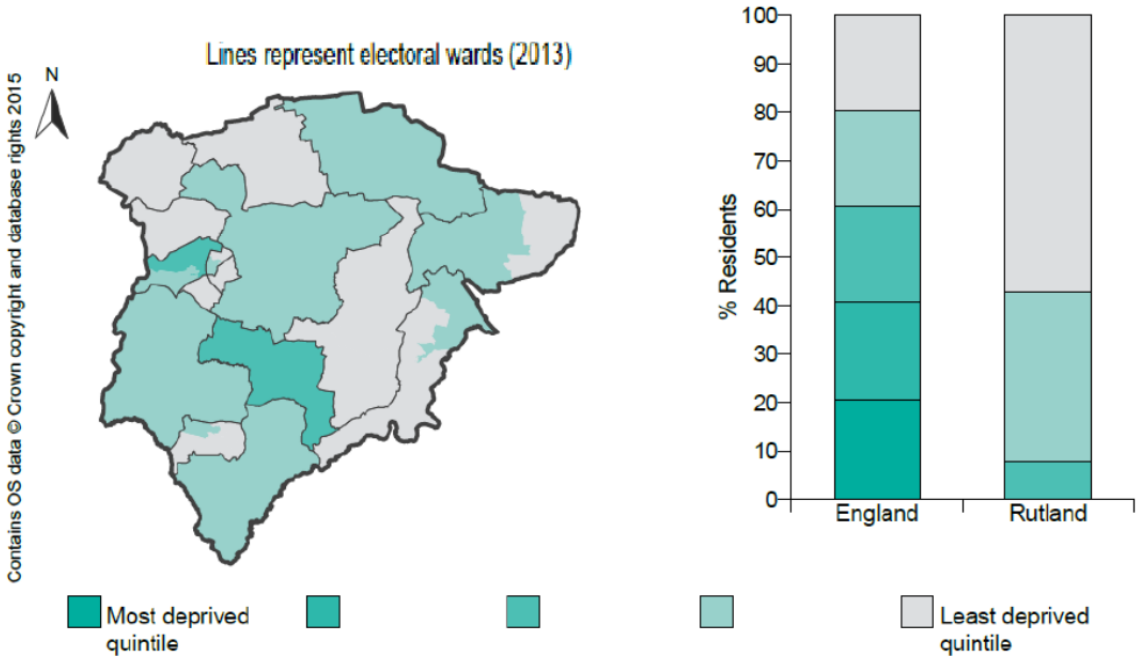


Figure 3 – Map and profile of Indices of Deprivation. Source: Rutland Health Profile - 2 June 2015, Public Health England

2.8 Health Economy Strategies

2.8.1 LLR Sustainability and Transformation Partnership

The LLR footprint forms a Sustainability and Transformation Partnership (STP) boundary. The LLR health partners commission and provide health and care services for over a million people in Leicester, Leicestershire and Rutland. Over the next five years, LLR health services will need to adapt and transform in order to ensure that they remain clinically and financially sustainable. The STP sets out the actions that will need to be taken to balance the pressures of continued growth in patient demand from an ageing and growing population, and a requirement to recover and maintain delivery against national access and quality standards. This is necessary at a time of historically low levels of financial growth in the NHS and substantial pressures on social care funding.

The financial challenge facing the NHS nationally over the next five years is well recognised, with 2018/19 set to be the most pressurised year where the NHS is set to have negative per person NHS funding growth. The local requirement set against this national backdrop is to make more rapid progress in the early years of the plan to move the provider sector back into financial surplus. This is going to be incredibly challenging.

The STP builds on the work of the Better Care Together programme, the plans of which were already well advanced and articulated in many areas, particularly around proposals for reconfiguring acute hospital services to address long standing issues around the condition of our premises and how they are utilised.

The current, three acute site configuration is an accident of history, not design, and is suboptimal in clinical, performance and financial terms, which has a direct impact on patient outcomes and experience. This results in duplication, sometimes triplication of services, which is an inefficient model. Clinical resources are therefore spread too thinly making services operationally unstable. Many planned, elective and outpatient services currently run alongside emergency services and as a result when emergency pressures increase, it is elective patients who suffer delays and last minute cancellations.

Over the last two decades there has been sustained under-investment in UHL's acute estate relative to other acute hospitals across the UK. There is a significant backlog maintenance requirement which will be reduced substantially through the consolidation of services onto two sites and a change of use for LGH.

Evidence indicates that patients, and particularly elderly patients, spend too long recovering in large acute hospitals and potentially deteriorating as a result, when they would be better served by rehabilitation services in their own home or in a community hospital. A "Home First" principle will be adopted where there is an integrated care offer for people living with frailty and complex needs. The focus will be to ensure that people can remain in their own homes. When this is not possible and they have to be treated in hospital, it will be ensured that their discharge is appropriately planned to enable them to get back into their home or community environment as soon as appropriate, with minimal risk of readmission.

The combination of providing care for patients closer to home, and the consolidation of acute services onto two sites will allow a focus on growing the Trust's specialised, teaching and research portfolio.

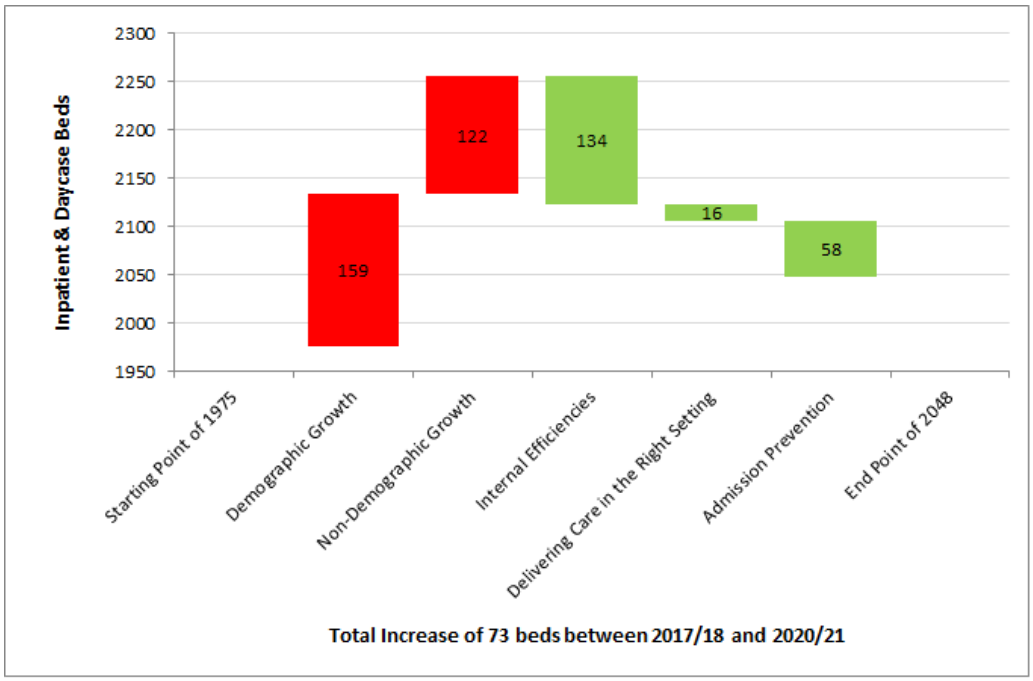
Through the Better Care Together and Better Care Fund programme progress has already been made on this, including the development of home based beds and integrated health and social care teams supporting patients in their home. This work will be continued through the proposals around integrated place based teams.

Although shifting the balance of care in the system is one of the important drivers behind the acute reconfiguration plans, they are also driven by two other factors.

- Clinical resources are spread too thinly, making services operationally unstable. By focussing resources on two sites, outcomes for patients can be improved through increased consultant presence and earlier regular senior clinical decision making;
- The Trust's financial recovery is directly linked to site consolidation. The "reconfiguration dividend" has been calculated at circa £25m per annum recurrent savings, which is the "structural" element of the current deficit.

In order to consider the impact of the above interventions and the associated planned efficiencies, work has been undertaken to understand the future acute bed capacity requirements. The following bed bridge, in Figure 8 describes the outcome of this modelling which will take acute beds from the current level of 1975 to 2048 by 2020/21.

Figure 8 - Bed increases: 2017/18 and 2020/21



The STP submission in November 2016 reflected a reduction of 243 acute beds in UHL, resulting in a future bed base of 1697. In response to feedback (1st February 2017) from the NHS England Director of Commissioning Operations and the NHSI Portfolio Director, LLR have reviewed the transformation programmes that deliver new models of care in order to validate the number of beds needed in the acute sector. The scale of reduction has been moderated: detailed analysis by work stream leads on interventions in relation to the new 'care test' has resulted in an increase in beds required in the acute sector above that stated in the November 2016 STP. Whilst this still represents an ambitious programme of transformation with intervention in the community to prevent admission, it is more realistic.

UHL anticipate increasing its existing bed base by 73 beds (4%), whilst negating the anticipated increase required to accommodate growth until 2020/21 (208 beds).

Through new ways of working and with a new service configuration, we will mitigate against the growth of 208 acute beds by 2020/21:

Table 15 - Mitigation against Growth in Acute Beds

Scheme of Work	Equivalent Reduction in Day Case Beds	Equivalent Reduction in Inpatient Beds
Improved Length of Stay efficiency	-	134
Prevent 4,000 avoidable admissions through integrated discharge teams across the STP	-	52
Reduce elective demand	6	-
Provide more planned elective work in the community with partners	16	-
Total Equivalent Bed Reduction	**22**	**186**
	208	

2.8.2 Consolidation on to Two Sites

Leicester General Hospital

Subject to the formal public consultation, the plan remains for emergency and specialist services to be moved to LRI and GH. The Leicester Diabetes Centre of Excellence (as well as some connected services) will remain at LGH and will continue to expand to become the pre-eminent diabetes research institute in the UK.

LGH will also continue to be home to other health and social care services. The Evington Centre will continue to provide community beds and it is likely that this will incorporate a stroke rehabilitation ward. Joint health and social care teams delivering services in people's homes will continue to have a base at the site. Leicester City CCG are also considering using a small portion of the LGH site as a centre for a primary care hub providing extended hours GP services and associated diagnostics.

Leicester Royal Infirmary

LRI will continue to be the primary site for emergency care. LRI will see a consolidation of maternity and gynaecology services, as well as the creation of a 'super ICU'. The paediatric element of the East Midlands Congenital Heart Centre (currently at GH) will move to LRI, subject to the outcome of the national consultation process, as part of the vision to create a fully integrated children's hospital and in order to meet national standards.

Glenfield Hospital

GH will grow as services move from both LGH and LRI. The relocation of vascular service from LRI was the first of these moves creating a complete cardiovascular centre. ICU, some surgical and renal services (including transplant) will move from LGH to GH into new build wards. GH will also see the creation of a 'super ICU'. The Trust also intends to build a new Planned Ambulatory Care Hub (PACH) at GH which will offer outpatient and day case care with a stay of up to 23 hours.

The diagram below depicts our planned journey to deliver service reconfiguration:

Figure 9 - Planned Journey to Deliver Service Reconfiguration

Reconfiguration and Quality of Care

Through the Trust's Reconfiguration Programme, there will be a focus on emergency and specialist care at LRI and GH, whilst ensuring that appropriate clinical services are provided in the county's community hospitals, to offer care as close to home as possible. The patient is at the heart of reconfiguration, and through consolidation, improved patient experience and quality will be delivered by:

- Reducing unnecessary patient journeys;
- Improving clinical adjacencies so that support and diagnostic services are close to where they are needed, promoting closer team working and providing a better patient experience;
- Reducing delays to care by streamlining care pathways;
- Reduce cancellations by protecting our elective beds by separating out emergency and planned care. This will be done by creating a planned ambulatory care hub at the GH as well as re-distributing some of our services into the counties' community hospitals;
- Improving the quality of the patient environment;
- Addressing the long standing mismatch between demand and capacity by making sure there is the right number of beds in medicine and the two new 'super ICUs'. This will have a knock on improvement for operating theatres as well as improving ability to deliver against the 62 and 31 day cancer performance metrics and the 18 week RTT standard;
- The provision of a single site Maternity Hospital (subject to public consultation) which allows the creation of a comprehensive, safe, sustainable and effective service for the

future through workforce changes and improved training, teaching, education and research;

- Providing services which are quicker, easier to navigate and of a higher quality; largely as a result of being able to focus on specialisms, improve processes and streaming, and because staff will no longer be spread across three main sites.

Operational Efficiencies

Ensuring the best use of resources is key to delivering financial sustainability across the system by 2020/21. Many of the plans set out how services can be redesigned and the reconfiguration of acute and community hospitals makes the best use of resources.

Lord Carter's 2015 report, *Operational productivity and performance is English NHS acute Hospitals*, found that there is significant unwarranted variation across all main resource areas. Through the Reconfiguration Programme UHL has plans to implement as many of the Carter and the 2017 Naylor Review recommendations as possible.

UHL Cost Improvement Programme delivery includes plans that are based on benchmarking, analytics and opportunities from national best practice such as *Getting It Right First Time*[1].

Five year Financial Gap

All of the health and social care organisations in LLR face financial challenge, as demand and demographic growth for services out-strip the increased resources available year on year.

While there is an expectation in the health sector that the funding available will rise by c. 2% each year, equating to an additional £200m over the time of the plan, predictions for the growth in both cost and demand range from 0.5% in some areas rising to 4.73% in more specialist areas of medicine, year on year.

The social care sector also faces similar challenges with demand in growth matched to a flat or reducing level of funding available to support social care services.

Without developing new ways of working the impact of increased demand creates a financial gap for health and social care as articulated in the November 2016 LLR STP over the five year timeframe of this plan of £399.3m. Of this healthcare accounts for £341.6m of the gap, whilst social care gap equals to £57.7m over the same timeframe.

The LLR system has been aware of this continuing demand/resource gap for some years and has developed a number of plans to mitigate this through the local transformation programme, Better Care Together. The revised STP plan builds on the earlier Better Care Together plan, which covered the period up to 2018-19.

Overall the impact of the growth on the system is primarily in acute and specialised services. Solutions will targeted through investment in community based services to deliver care in the most appropriate settings.

Solutions to close the gap are mapped into five STP strands of work: New Models of care, Service Configuration, Redesigned Pathways, Operational Efficiencies and Getting the

[1] http://gettingitrightfirsttime.co.uk/

Enablers Right. Savings plans for LLR Local Authorities and for specialised services are included within these solutions.

CIP schemes are in place to deliver c. £175m of the required savings as articulated in the November 2016 LLR STP.

The single largest scheme in LLR is the move from three to two acute sites for UHL. This deals with both quality and workforce issues created by the duplication of services over two or more sites. Once the reconfiguration is complete the directly attributable cost saving from this will be circa £25m each year.

2.8.3 UHL Clinical Vision and Reconfiguration Strategy

UHL's clinical strategy is focussed on delivering high-quality, patient centred services in the most appropriate setting with excellent clinical outcomes. There is a process of continual quality improvement for clinical outcomes, morbidity and mortality rates and other clinical indicators to ensure that the Trust remain the provider of choice for patients.

The model of clinical practice will be to provide consultant delivered, rather than consultant led, patient care. It will create a sustainable workforce for the delivery of responsive multi-disciplinary clinical services seven days a week which meets the needs of patients and clinicians. It will seek and exploit opportunities for service integration across health and social care by removing the historical barriers to change. Training and education will play an integral part in ensuring staff have the right skills now and for the future. Training opportunities to support self-care in long-term condition management and carers will be explored.

The strategy reflects the changes in population demographics, outlined in the Local Authority JSNAs, placing the patient at the centre of service planning and design ensuring that holistic patient centred care remains at the heart of everything we do. For example services will be tailored to meet the challenges of a rising elderly population; ensuring integrated care is provided across primary, community and social care. The Trust will work with partners to develop the infrastructure and networks to offer expertise across the health community to ensure that care for the older person is as seamless as possible.

People are living longer, and the NHS's ability to treat and help to manage conditions that were previously life-threatening continues to improve. Alongside this, the NHS faces a potential funding gap of around £30 billion by 2020/21 as articulated in the *NHS Five Year Forward View*[2] meaning that the NHS will need to radically transform the way it has traditionally provided care to new and innovative models necessitating a significant shift in activity and resource from the hospital sector to the community. Across LLR this reflects a funding gap of £399.3m as articulated in the November 2016 LLR STP.

UHL will meet its funding gap by working collaboratively with its LLR Health and Social Care partners to re-design patient care pathways to ensure that they continue to provide high quality care, outcomes and patient experience whilst delivering value for money. The Trust has an on-going operating deficit, in part related to the current configuration of its clinical services, which do not optimise clinical adjacencies and patient pathways. UHL's

[2] https://www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf

reconfiguration strategy will optimise where and on which site its services are located as care pathways change to meet the financial challenge. The methodology supporting the future location of services will be clinically driven, evidence based, inclusive, open and transparent however will necessitate tough decisions for the health community if it is to meet the 'value for money' test.

The Trust is proactively responding to the national drive towards fewer regional centres of excellence for specialised services by ensuring its services deliver innovative, high quality patient care through robust Research and Development programmes which enable patients to benefit from leading edge developments in the care of specific conditions.

UHL will specifically seek to ensure it remains as a national centre of excellence for its work in Cardiac, Respiratory, Vascular, Renal, Cancer and Diabetes and significantly strengthen its portfolio of other key services to ensure they are sustainable in the future.

As a result of centralising and specialising services, UHL will improve quality, safety and the hospital experience for patients from the time they park their car to the moment they leave; UHL will be recognised for low mortality rates, for low waiting times, and for patients rating the care they receive as excellent.

UHL will save money by no longer supporting old, expensive and underutilised estate and will become more productive.

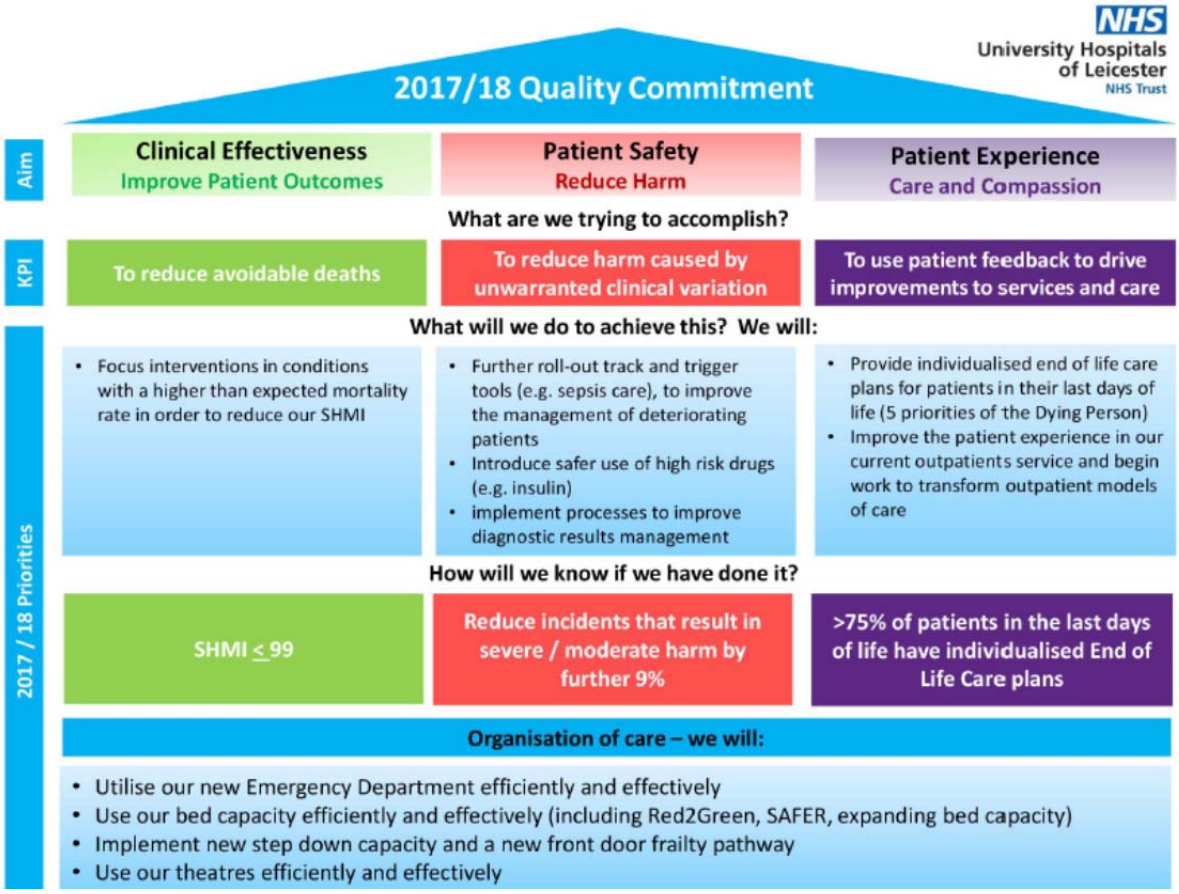
UHL's patients are at the heart of all the Trust does, and believes that 'Caring at its Best' is not just about the treatments and services provided, but about giving patients the best possible experience. That is why the Trust is proud to be part of the NHS and proud to be Leicester's Hospitals.

The Trust Strategic Objectives for 2017/18 are outlined below:

Figure 10 - Trust Strategic Objectives for 2017/18

The key focus during 2017/18 is articulated within the Trust's Quality Commitment:

Figure 11 - Trust Quality Commitment Statement



2.8.4 UHL and LLR Estates Strategies

The 2014 UHL Estates Strategy, incorporating Development Control Plans and outlining the plan to move to 2 acute hospital sites, is attached at Appendix 5. This is in the process of being updated and will be complete for submission alongside the FBC. The proposed development is consistent with the UHL Estates Strategy.

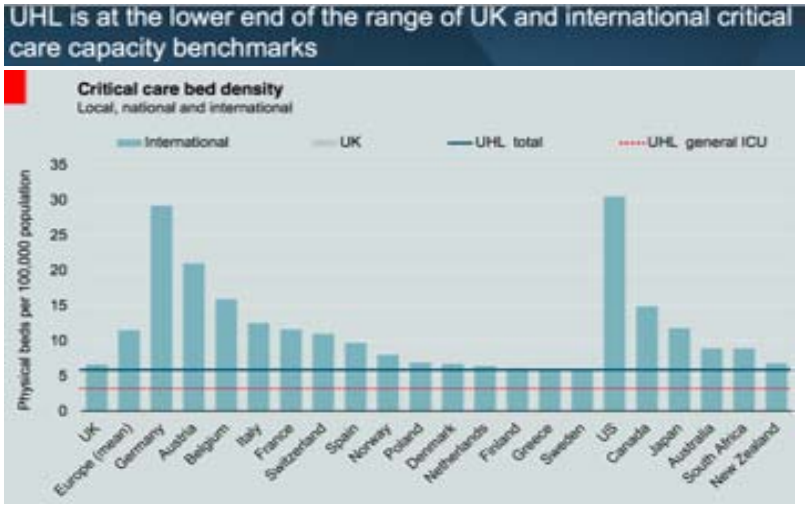
Recognising that confirmation of funding will be subject to demonstration that this scheme is part of a robust estates and capital strategy across the STP area, the LLR STP is in the process of updating the 2015 LLR Estates Strategy which is attached at Appendix 6. The updated version will be appended to the FBC.

2.9 ICU Strategy

The Strategy for delivering ICU care at UHL supports both the national and local imperatives. There is a recognised move towards using critical care beds at an earlier stage in a patient's treatment. On an international level the UK has a low number of ICU beds compared to its

population, and within the UK, UHL has a lower than average per capita provision of ICU beds.

Figure 12 - Critical Care UK and International Capacity Benchmarks



Independent analysis was commissioned from Bazian in 2014 to assess the current and future requirements for ICU and HDU beds in UHL, work that was subsequently been updated in 2016 by Capita Health using the Simul8 model, which has validated the recommendations.

The following recommendations were made by Bazian:

- Based on existing case mix of patients treated in UHL there are substantial benefits from merging smaller into larger units, where economies of scale can be achieved;
- There is a limit on what can be achieved practically – the movement of HDUs also requires the movement of specialities. The phasing of capital expenditure should also be considered;
- The merging of HDUs is recommended for quality and governance reasons, this could be undertaken in the medium term (1 to 5 years);
- If reconfiguration can be achieved in five years it is recommended that at least a 15% increase in capacity is planned for every 10 years. More precise predictions will depend on the effect of new interventions on length of stay.

UHL currently provides Level 3 adult critical care services at each of its three acute sites. This provision enables a range of specialities, which require a co-location with Level 3 critical care, to be delivered across all three sites.

The Trust's five year strategy for delivering critical care services is the creation of two 'super ICUs' GH and LRI. These will care for Level 2, 3, and 4 patients, staffed and delivered to the national core standards to ensure the highest quality care in the most appropriate environment. This will be supported by a robust tier of Level 1 care beds within specialties throughout the organisation which will, in turn, be supported by critical care outreach services delivering 24/7 care.

The Trust's ICU strategy also takes into consideration the revised core standards published by the National Society of Intensive Care Medicine (NSICM) in 2013. These were adapted by

NHS England to develop their draft service specification for adult critical care facilities (D16). Adult critical care D16 has key 'dashboard' standards that provide commissioners with the opportunity to performance manage provider services to ensure that compliance with standards is achieved.

At present, the revised D16 is still in draft format and is not published on NHS England's website. NHS England has confirmed that until such time as the specification moves from draft status UHL is not expected to deliver against it. It is expected that in the future all critical care services within UHL, including satellite HDU areas, will be monitored against these standards as part of the annual contract.

2.9.1 Existing Arrangements

Current Activity and Demand

UHL currently provides Level 3 adult critical care services at each of its three acute sites. This provision enables a range of specialties, each requiring a co-location with Level 3 critical care to be delivered across all three acute sites.

GH

Currently GH Adult Intensive Care (AICU) admits approximately 1,600 patients per annum with approximately 75% of these being planned or unplanned cardiac surgery admissions. The majority of emergency admissions are from the cardiology, respiratory wards and vascular surgery (which moved to GH from LRI in May 2017). GH AICU is also a regional tertiary centre for severe acute respiratory failure (SARF) and extra-corporeal membrane oxygenation (ECMO) admissions.

LRI

The LRI unit admits nearly 1,400 patients per annum with approximately 80% of these being emergency/unplanned admissions. The emergency admissions come from three sources: the emergency department, from theatres and from the ward base at LRI. The majority of the planned cases consist of expedited major surgery for cancer patients.

LGH

The Department of Critical Care Medicine (DCCM) admits 900 patients per annum with approximately 60% of these planned surgical admissions. Emergency admissions come from general surgery, nephrology, urology, renal transplant and obstetrics and gynaecology. These come to the unit from general wards, nephrology wards and renal HDU but, in addition, LGH DCCM accepts tertiary referral Hepatobiliary patients from surrounding district general hospitals (DGHs).

The reconfiguration of services, associated with the removal of Level 3 ICU services from LGH (with HPB, and Renal Transplantation services being transferred to GH and colo-rectal and emergency general surgery to LRI) adjusts the ICU bed requirement on LRI and GH and the section below sets out how the numbers of physical spaces on each site has been determined to feed into the estates brief.

Table 16 below summarises the current physical and funded Level 3 and 2 bed numbers on each:

Table 16 - Current Physical and Funded Level 3 and 2 Bed Numbers

Site	Physical Bed Spaces
LRI	21, plus 6 annex.
GH	22
LGH	12
Total	55 plus 6 annex.

Table 17 below shows the number of elective cancelled operations in 2016/17 due to lack of ITU Beds:

Table 17 - Elective Cancellations 2016/17 due to Lack of ITU beds (sourced from HIS data set)

	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Total
LRI	5	1	8	5	6	2	1	7	2	5	0	1	43
LGH	2	0	0	1	2	0	0	0	0	1	0	0	6
GH	7	2	2	1	0	1	0	1	0	5	3	2	24
Total	**14**	**3**	**10**	**7**	**8**	**3**	**1**	**8**	**2**	**11**	**3**	**3**	**73**

Table 18 below shows the current specialty use of Level 3 critical care at LGH, by bed day:

Table 18 - Current Specialty use of Level 3 Critical Care at LGH, by bed day

Specialty	Level 3 Bed Days (2016/17)	Service Site for Level 3 post interim ICU
Hepatobiliary	745	GH
General Surgery	179	LRI
Colorectal	170	LRI
Transplant	83	GH
Nephrology	267	GH
Orthopaedics	52	LRI
Urology	156	GH
Gynaecology	19	LRI
Obstetrics	39	LRI
Neurology	2	LRI
Total	**1,712**	

The Position Post Reconfiguration

An option appraisal review was held in February 2015 involving representatives from all specialties and support services affected by the ICU Reconfiguration. The purpose of this meeting was to agree the immediate configuration of services across the three sites which would enable Level 3 adult critical care to re-locate from LGH by December 2015.

A set of over-arching principles were agreed at the meeting which will govern the remainder of the project:

- Any part of a service that is dependent on Level 3 adult critical care must be re-located to LRI or GH;
- If the above results in parts of a services remaining that are so small as to be destabilised then these parts must also move or have a robust interim solution;
- Any services at LRI and GH that do not require Level 3 adult critical care and can move to LGH to free up the estate footprint must consider moving.

The table below shows the outcome of the option appraisal which concluded the future site locations of those services dependent on Level 3 care, as detailed below:

Table 19 - Future Site Locations of those Services Dependent on Level 3 care

Service 2016/17 data	Level 3 Bed days	Planned Patients	Unplanned Patients	Future Service Delivery
HPB	745	235	93	Inpatient and emergency service move to GH
Colorectal and General Surgery	349	80	127	Inpatient and emergency service move to LRI
Transplant	83	6	9	Inpatient and emergency service move to GH
Nephrology	267	8	31	Planned Level 3 patients admitted to GH. Retrieval service for Level 3 unplanned patients to GH.
Urology	156	33	21	Planned Level 3 patient's surgery to be undertaken at GH, which is the final future location for urology services. Retrieval service for unplanned Level 3 patient's to GH
Gynaecology	19		2	Planned Level 3 patient's surgery to be undertaken at LRI, where there is an existing gynaecology service. Retrieval service for unplanned Level 3 patients to LRI
Orthopaedics	52		13	Planned Level 3 patient's surgery to be undertaken at LRI, where the orthopaedic trauma service is located. Retrieval service for unplanned Level 3 patients to LRI
Obstetrics	39		14	High risk patients to be looked after by LRI maternity hospital. Retrieval service for unplanned Level 3 patients to LRI

Since the options appraisal was undertaken detailed work has now been carried out using Intensive Care National Audit and Research Centre (ICNARC) data for 2016/17. This was based on final assumed destinations of specific services and patients post reconfiguration of the ICU services.

To ensure this analysis is as robust as possible, two complementary investigations have been carried out to:

- Review overall bed days proposed on each site;
- Analyse the number of patients in beds on a daily basis;

Examining both figures has ensured that peaks in demand have been allowed for in terms of physical space deemed to be required.

Table 20 below summarises the demand for ICU bed spaces across UHL based on the revised reconfiguration associated with the removal of Level 3 ICU from LGH.

Table 20 - Current and Future Provision for ICU Bed Spaces across UHL

Site	Current provision of Physical Bed Spaces	Demand for Physical Bed Spaces
LRI	21, plus 6 annex.	21, plus 6 annex.
GH	22	33
LGH	12	4 (Level 2) plus 1 Level 3 for stabilisation
Total	**55 plus 6 annex.**	**58 plus 6 annex.**

The table below provides the summary of the data analysis undertaken reviewing total bed days and numbers of patients on a daily basis, for both scenarios pre and post reconfiguration. The detailed activity models are attached at Appendix 7 and 8.

Table 21 - Pre and post Reconfiguration ICU bed days and beds

ICU Activity	GH	LRI	LGH	Total
Bed days 2016/17 Baseline	7,466	6,261	3,890	17,617
Bed days post-reconfiguration	9,537	7,304	776	17,617
Beds required 1.5 standard deviations based on 12 months data	31.34	23.54	2.92	57.80
Physical bed post-reconfiguration	33	21 plus 6 annex	4	58 plus 6 annex

This shows how the future demand on ICU will be configured (based on 2016/17 levels) following the service moves and that this is aligned with the capacity that will be in place.

2.9.2 LGH Sustainability

For services remaining at LGH, a retrieval service will be put in place for any unplanned patients requiring on-going Level 3 care beyond an initial four-hour stabilisation period.

Based on 2016/17 data the numbers of unplanned ICU Level 3 patients for each service who would require transfer from LGH to a Level 3 service at either LRI or GH is in Table 22 below:

Table 22 - Unplanned ICU Level 3 patients

Service	Patients requiring transfer to Level 3 site from LGH (16/17 data)
Orthopaedics	13
Urology	16
Gynaecology	2

Service	Patients requiring transfer to Level 3 site from LGH (16/17 data)
Obstetrics	14
Neurology	0
Total	**45**

2.10 Surgical Services across LGH and LRI

2.10.1 Existing Arrangements

At present, LGH receives emergency 'general' gastro-intestinal surgery admissions (e.g. hernias, non-specific acute abdominal pain, abscesses etc.) as well as emergency HPB admissions (acute cholecystisis, acute pancreatitis, biliary colic, chronic pancreatitis and obstructive jaundice).

The LRI also receives emergency general surgery admissions, with the surgical emergency take split on a 1:1 basis between LRI and LGH. Elective work is carried out across all three sites, with elective patients who have a predicted length of stay of more than one day undertaken only at LRI and LGH. GH currently takes day case general surgery patients only. Utilisation data for 2016/17 is identified in Table 23 below:

Table 23 - Current Configuration of GI Surgery across LRI and LGH

		LGH		LRI		
		Colorectal	HPB	Emergency Surgery Ambulatory Care	Colorectal (CRC)	Gastro-esophageal (UPGI)
Wards	Elective ward bed occupancy	6	9	n/a	6	4
	Emergency ward occupancy	22	36	n/a	21	22
Theatres	Main Theatre sessions	7.5	10	1	9.5	9
	Ave. Weekly Emergency Theatre Cases	15	n/a	n/a	34	
	Day case theatre sessions per week	n/a	2	2	0.5	1
Critical Care	Elective Level 2 ICU bed days	153	622	n/a	143	179
	Emergency Level 2 ICU bed days	272	456	n/a	257	143
	Elective Level 3 bed days	83	91	n/a	130	285
	Emergency Level 3 bed days	263	529	n/a	259	213

Current Surgical Service provision at LGH

The colorectal department at LGH comprises of six surgeons and two specialist nurses. The colorectal department is one of the largest cancer services in the country providing laparoscopic and robotic cancer resections and localised resections such as transanal endoscopic microsurgery (TEMS) and transanal resection of tumour (TART) procedures.

In addition to their cancer work, the unit undertakes a range of minor surgical procedures such as haemorrhoidectomies, fistula-in-ano and sphincteromies. The general surgical component of the service includes hernias (laparoscopic and open) and a limited number of laparoscopic cholecystectomies, undertaken by three of the six surgeons. The unit undertakes a general surgical on-call rota covering a range of emergencies including perforation, hepatobiliary emergencies, obstruction, non-specific abdominal pain and cutaneous abscesses.

Hepatobiliary emergencies requiring intervention from the HPB team are transferred to the care of a HPB consultant. The unit undertakes lower Gastro-intestinal endoscopy including colonoscopy and flexible sigmoidoscopy as diagnostic, screening and therapeutic procedures. There are regular sessions with gynae-oncology for cancer resections or complex benign work.

Currently there are six surgical wards at LGH, for general surgery, colorectal, HPB and urology, some of which are shared between specialities. These are identified in Table 24 below:

Table 24 - Surgical Wards at LGH

LGH Surgery and Urology wards	Bed Base	Specialties
Ward G20 (was G23) Up to 23 hour care	20	General Surgery, colorectal, HPB, Urology and Gynaecology
Ward G 22	16	General surgery, colorectal, HPB
Ward G 26	25	Male urology
Ward G 27	20	Female – general surgery, colorectal, HPB and urology
Ward G 28 (SAU)	25	General surgery, colorectal, HPB
Ward G 29 (SAU)	27	General surgery, colorectal, HPB
Total	**133**	

Bed modelling and occupancy reviews undertaken have analysed the spilt between specialties and the additional bed numbers that will be required at LRI and GH to accommodate the move of general surgery, colorectal and HPB away from LGH, together with the bed base to be retained at LGH to manage the urology workload. This is identified in Table 25 below:

Table 25 - Surgical Wards Across UHL

Future Site	Service	Bed numbers (based on 1.5 Standard Deviations)*
LRI	General Surgery and colorectal	43
GH	HPB	55
LGH	Ward 20 – day case and 23 hour care	20
LGH	Urology	38
Total		**156**

* 1.5 Standard Deviations have been used as this takes into account a level of variation away from the mean, and will be valid for 86% of days thereby minimising the occasions when there will be bed pressures

Current General Surgical provision at LRI

LRI surgical service consists of six upper GI surgeons and six colorectal surgeons. Maintaining two separate sites (LRI and LGH) for major inpatient activity results in some duplication of resources. In addition the surgical take is presently split across the two sites on an approximated 60% (LRI) and 40% (LGH) split which results in increased expenditure and delay in treatment across the two sites, particularly for patients first seen in the Emergency Department who are then transferred to LGH.

The Position Post Reconfiguration

The future proposed configuration locates colorectal and emergency general surgery from LGH to LRI and HPB to GH.

The reconfiguration of colorectal and general surgery to LRI will enable better pathways for emergency patients with prompt intervention for patients who require emergency surgical treatment. The move will allow for economies of scale with the improved use of middle-grade and junior doctor cover and provide new training opportunities. By ensuring prompt and efficient processing of emergency patients, more bed spaces will become available for elective cases, leading to fewer cancellations for cancer resections. The pooling of consultants at LRI onto a single merged rota will reduce the frequency of on-calls.

Demand and Capacity at LRI

The surgical service will occupy bed and theatre capacity vacated by the move of the vascular service to GH and the creation of the Emergency Floor and additional theatre capacity will be vacated by the transfer of day case work from LRI to LGH.

The following will ensure that there is sufficient theatre capacity to manage the general 'non-HPB' emergency surgical take moving to LRI:

- Release in emergency pressures from transfer of vascular to GH;
- Utilisation of day case theatre sessions to accommodate the increase in emergency procedures;
- Most of these procedures will be of lower acuity such as strangulated hernias, abscesses and laparoscopic appendectomies;
- Relocation of day case and short stays (less than 23-hour activity) from LRI to LGH.

Table 26 - Emergency Theatre Demands at LRI following reconfiguration

	Cases per week			Time per week (mins)		
	Max.	Min.	Ave.	Max.	Min.	Ave.
Current LRI	52	5	37	4,950	851	3,923
Without vascular surgery	43	4	34	3,702	817	3,431
General Surgery from LGH	23	2	15	2,363	161	1,226
Overall once LGH non-HPB has moved	66	6	49	6,065	978	4,657

Key issues to note include:

- The current average time per case at LRI is 100.1 minutes and at LGH 81.7;
- The increase in average theatre time at LRI prior to the vascular move to post the non-HPB move is 734 minutes, equivalent to three theatre lists. Discounting the loss of vascular it is five theatre lists per week;
- The transfer of day case and less that 23 hour stay cases and theatre lists to LGH will release up to 4.5 theatre lists per week.

Impact for Gynaecology

The majority of the Gynaecology and Gynae-oncology elective surgery will remain at LGH co-located with urology and maternity services However some surgery that requires colorectal surgical input and Level 3 ICU care will be transferred to the LRI site. Patients will be looked after on the General Surgical Wards. There will continue to be colorectal surgeon presence at LGH during the week to provide advice and assistance if unexpected general surgical complications are encountered during elective surgery.

2.11 Surgical Services Moving to GH

2.11.1 HPB

The Hepato-Pancreato-Biliary (HPB) multi-disciplinary team is a multi-professional group serving the populations of Leicester, Leicestershire, Rutland, Northampton, Peterborough and Kettering. The overall population served approximately 2.5 million. The unit in Leicester is a Level 1 Primary HPB Cancer service (as defined by the new HPB Cancer Measures). Services offered include laparoscopic/open surgical resections, ablation procedures, palliative bypasses, nuclear medicine treatment and percutaneous interventional procedures (such as transcatheter arterial embolisation (TACE), selective internal radiation therapy (SIRT) and portal vein embolisation). In addition the Leicester unit undertakes the majority of laparoscopic cholecystectomies (90%) and endoscopic retrograde cholangiopancreatography (ECRP) (90%) annually in addition to providing an emergency HPB service for bile duct injuries and liver trauma. Leicester HPB also has the largest series of total pancreatectomy and autologous islet cell transplantation in Europe.

The philosophy of the unit is “not just to meet but to surpass all standards in clinical care and research excellence”.

Existing Arrangements

The team is comprised of seven HPB Consultants, three Clinical Nurse Specialists, two Multi-Disciplinary Team (MDT) coordinators, a data analyst, clinical assistant and administration and support staff.

The work of the unit can broadly be divided into four main streams:

- Endoscopic Work (ERCP and endoscopic ultrasound (EUS));
- Cancer and major resections;
- Major complex Biliary work;
- Laparoscopic Cholecystectomy and day case procedures.

40% of all emergency surgical admissions relate to biliary diseases. National recommendations from both the Association of Surgeons of Great Britain and Ireland (ASGBI) and recent NICE guidance have strongly recommended that biliary diseases are managed as a separate tier of emergency by appropriate surgeons.

Although biliary pathology is already streamed to LGH, some operations are not always undertaken in a timely fashion due to emergency theatre pressures at LGH.

The HPB service is continually refining and developing its service, to provide real patient improvements. Present initiatives include:

- Day case laparoscopic cholecystectomy;
- Enhanced recovery for post-operative patients;
- Expedited or “hot” gallbladder service;
- Enhanced ERCP service of out of area referrals;
- Multi-disciplinary chronic pancreatitis clinics;
- Emergency pancreatic cancer resection pathway;
- Prehabilitation preoperative clinics;
- Patient recovery coaches.

HPB Services at GH

The HPB surgeons are not on-call 24/7 at LGH currently because of a combined rota with the colorectal surgeons. Separating the emergency take into specialist services between LRI and GH will ensure the most appropriate surgeon manages the right patients. This will ensure there is timely input from specialists for patients in ED and support the delivery of 7-day service standards.

It will also deliver a reduced length of stay, reductions in readmissions and reduced activity for commissioning CCGs.

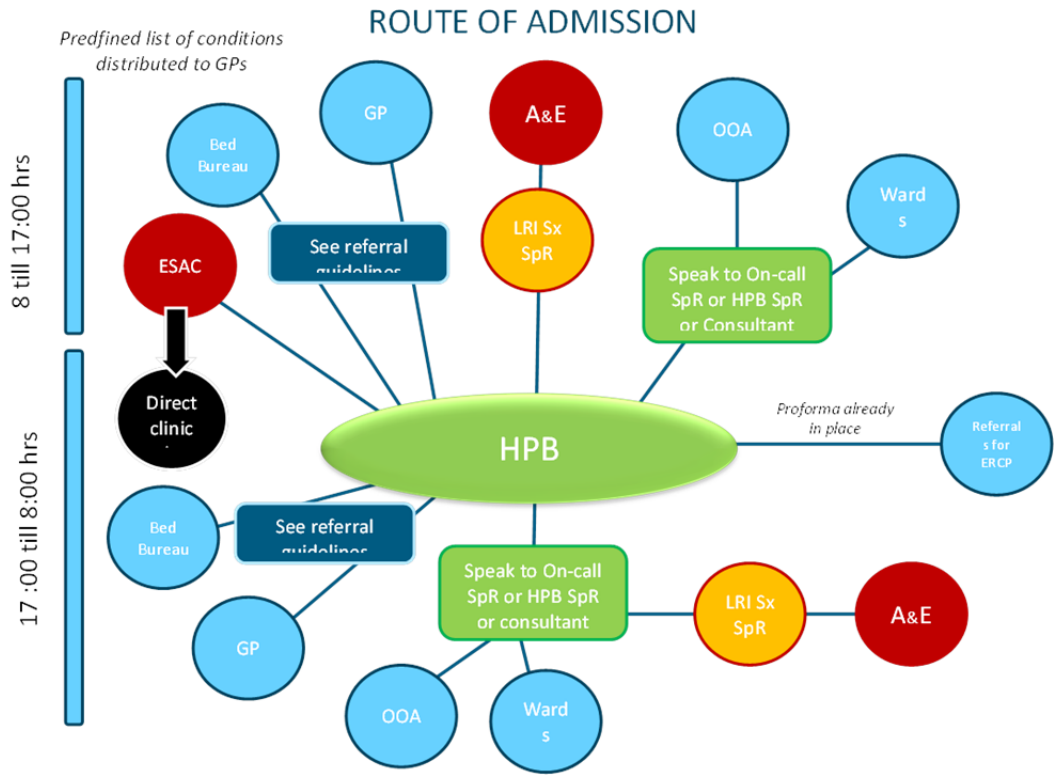
There will be two 1:9 on-call rotas for the surgeons at LRI. . The HPB surgeons will undertake a 1:7 on-call service at GH managing all biliary diseases, which account for 40% of the emergency surgical take.

The HPB Clinical Operational Policy includes the patient pathways that will be in place with the formation of a standalone HPB unit at GH, with the inclusion of admission criteria.

Although the inpatient and emergency service will relocates to GH, Outpatient and day case activity will remain at LGH. This will mean a change in the way of working in clinics; via the use of more all day clinics with two consultants running parallel clinics.

Figure 13 identifies the source of patients to the HPB service:

Figure 13 - Route of Admission to HPB Service



*ESAC (Emergency Surgical Ambulatory Care)

HPB Activity – Capacity Requirements

Theatre Capacity

HPB requires 13.5 weekly theatre sessions (incorporating evenings and weekend working). This excludes day case operating lists, which will continue to be based at LGH. The service requires access to an emergency 24-hour theatre (non-resident staffing from 20:00). There are of 2.1 cases per day on average.

Table 27 - HPB Activity Analysis

	Cases	Time Taken (mins)	Percentage
Overall activity	1,045	85,711	n/a
HPB surgical activity (per cons)	859	52,118	82.2% of all cases taking 60.8% of all theatre time
HPB surgery (filtered to HPB procedure type)	533	40,536	62% and 78% respectively of total cases and time undertaken by HPB surgeons.
Projected increase *	240	27,480	n/a
Projected HPB activity	733	70,180	n/a

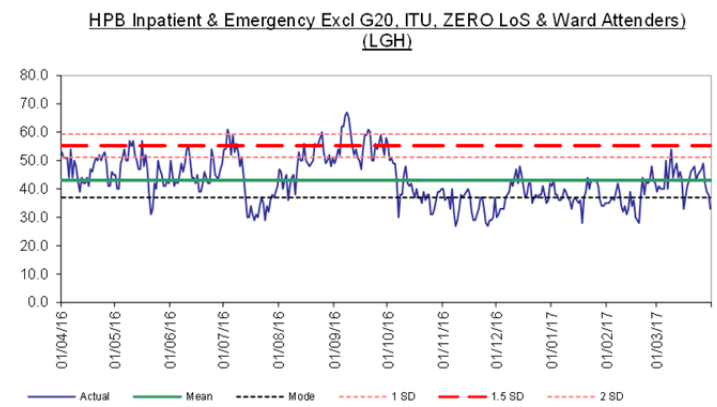
**800 laparoscopic cholecystectomies performed annually, 30% present as emergencies, 240 per annum.*

**Average operation duration (from emergency data) 116 minutes.*

Bed Capacity at GH

55 inpatient ward beds are required for emergency and elective patients, to deliver capacity at 1.5 Standard Deviations from the mean as identified in Figure 14 below.

Figure 14 - HPB Inpatient and Emergency (LGH)



Min	27
Max	67
Mean	43
Median	42
Mode	37
1 SD from Mean	51
1.5 SD from Mean	**55.3**
2 SD from Mean	59.3
85% LOS Method	50.7

Impact for Urology

It has recently been confirmed by the Trust that the location for urology services in the long term will be GH site. An interim solution will be put in place in advance of this with the relocation of Level 3 ICU services from LGH. Planned level 3 ICU urology patients will have their surgery at GH and be looked after, following discharge from ICU, on one of the new HPB wards. Unplanned level 3 patients will be transferred to GH by the retrievals service that will be in place.

2.11.2 Transplant Services

The nephrology and renal transplant service at UHL provides services for patients with kidney disease in LLR, Northamptonshire, Lincolnshire, Peterborough and parts of Cambridgeshire.

The components of the clinical services are:

- Inpatient care of patients with acute nephrology problems and patients with end stage renal failure with inter-current illness or complications related to dialysis including vascular access problems;
- Inpatient care of patients undergoing renal transplantation (both live donor and deceased donor) and of renal transplant patients with inter-current illness or complications related to renal transplantation;
- Vascular access inpatient and day case surgery;
- Outpatient care of patients with renal disease [general nephrology, advanced chronic kidney disease, renal transplants, established kidney failure, specialist nephrology clinics (renal obstetric, young adults, vasculitis)] and specialist surgical clinics (live kidney donor, endocrine);

- Specialist outpatient transplant care: kidney biopsies, rejection treatment, IV medication and dressing management;
- Nephrology and Transplant ambulatory care service (currently based on LGH Ward 10);
- Renal community teams providing pre-dialysis care, home dialysis care and End of Life Care;
- Haemodialysis at 10 sites across the East Midlands including the main unit at LGH (which has 29 stations);
- Peritoneal dialysis programme;
- Home haemodialysis programme.

The inpatient facilities at LGH consist of the areas identified in Table 28 below:

Table 28 - Inpatient Facilities at LGH

Ward	Beds	Description
17	14	Transplant ward
15A	7 plus 2	High dependency and 2 haemodialysis beds
15N	17	Female nephrology
10	18	Male Nephrology
Total	**58**	

This case moves the existing transplant beds from Ward 17 to GH and reduces the total number of Transplant beds from 14 to 12. There is a recognition that the resulting site spilt for transplant and nephrology is only clinically sustainable over a short term period, not least because of the pressure this will place on small consultant workforce. The Trust is therefore developing separately the options to move nephrology to GH, at an early stage, at low cost. This will be subject to a separate business case.

The criticality of moving transplant first relates to its requirement, in accordance with the National Service Specification, to be co-located with both Level 3 ICU and also with access to a 24/7 emergency theatre.

The separation of the two services is highlighted as a risk and mitigations have been established to manage this risk. It is only the inpatient and emergency element of the transplant service which will move within project; day case and outpatient services will remain at LGH in the short term, with transplant outpatients being moved to GH as soon as practically possible.

The transplant service uses six theatre sessions per week. There has been fluctuation over the last three years in both living and deceased donor transplant numbers, as shown in Table 29 below:

Table 29 - Transplant Figures

Year	Living	Deceased	Total
2014/15	32	80	112
2015/16	21	71	92
2016/17	26	84	110
2017/18 (plan)			122

Table 30 - Transplant Activity 2016/17

Activity Type	Spells	Bed days	Average Length Of Stay
Inpatients	51	286	5.6
Emergencies	329	1,834	5.6

The co-location of renal transplant services with cardiology, cardiothoracic and vascular at GH brings synergies that will further enhance the outcome of renal patients with multiple co-morbidities.

Until the long term reconfiguration is delivered there will be a requirement for cross site working for both consultant and middle grade medical staff. The transplant surgeons and transplant nephrologists will provide all inpatient care at GH, but will continue to have a base at LGH where outpatient clinics, day case activity and MDT meetings will take place. The principle pressure will be to provide appropriate medical cover for both sites out of hours and at weekends. This will be managed from existing revenue resources.

2.11.3 Theatre Capacity at GH

The additional demand on theatre capacity at GH from the service moves is outlined in Table 31 below, together with the plans for how this will be met.

Table 31 - Demand for Theatre Capacity at GH

Service	Sessions required
HPB - emergency	Emergency theatre access (5 sessions required to create a emergency theatre at GH with vascular exiting sessions)
HPB - elective	13.5 sessions (including evening and weekend working)
Transplant - emergency	emergency theatre access
Transplant - elective	7
Total	**25.5**

Table 32 below identifies that there is sufficient available capacity for the move of additional surgical activity to GH.

Table 32 - Available Theatre Capacity at GH

Theatre	Sessions
Theatre 6 – General Surgical day case activity to be relocated to LGH	10
Theatre 1 paediatric cardiac sessions – if UHL retains Children's congenital heart disease services (NHSE service review and consultation into congenital heart disease services currently ongoing), the Trust will relocate this service to LRI by July 2019. If the service is decommissioned these sessions will be vacated.	8
Extending theatre operating sessions, in line with the Trust's Operational Policy, to include three session days and six days elective operating.	8
Total	**26**

2.11.4 Interventional Radiology

The principal objectives of UHL's imaging services are to provide high-quality, safe, efficient and effective patient imaging at the right time and in the right place to facilitate timely decision-making and treatment planning throughout the patient journey.

Imaging services are provided across all three UHL sites, LRI, GH and LGH, and to all referrers and patient groups. The service aims to meet both national diagnostic waiting time targets and internal standards for inpatient and emergency imaging.

In essence, the objectives of the service are to:

- Improve patient experience by providing equality of access to the full range of diagnostics and interventions, ensuring that patients are receiving a high quality service, with access to the most modern techniques;
- Deliver high quality, safe, efficient and effective Imaging at the right time in the right place to facilitate timely decision making and treatment planning;
- Ensure the right level of accessibility to services and treatments offered in conjunction with other services;
- Work jointly with other services to optimise care and enhance the patient journey;
- Ensure patients are as safe as possible throughout each procedure working within national guidelines;
- Meet national guidelines and benchmarks;
- Best utilise the equipment resources available to offer a responsive and timely service;
- Provide emergency Interventional Radiology (IR) across all modalities 24 hours per day 365 days per year;
- Ensure a collaborative approach to patient pathways and outcomes;
- Develop and sustain the resilience of IR in terms of facilities and workforce;
- Support and enhance the academic components of the service, and development of the workforce;
- Employ and retain motivated (proud and happy), competent staff in a robust workforce plan, underpinned by robust design and escalation processes to provide internal and external support to maintain quality and speed of patient care;

- Assist in the Improvement mortality and morbidity rates for patients and improve survival rates following hospitalisation.

This OBC identifies the changes required within GH's imaging services in order to support the immediate clinical need to re-locate Level 3 adult critical care activity from LGH. It proposes the preferred option for investment in imaging services that will ensure optimal clinical outcomes while maintaining efficiency and value for money.

The benefits of this project will include:

- The co-location of additional capacity alongside the existing imaging department will allow for efficient flow of patients;
- The expansion of imaging will allow interventional procedures to be carried out for HPB and Renal Transplant;
- Critical adjacencies will be met to facilitate urgent response in case of emergencies;
- Effective use of resources, staffing and equipment;
- Provision of support services that provide the same quality and capacity as the current facilities in the right place at the right time;
- Essential adjacency of the IR suite to ICU Level 3 for patients undergoing Endoscopic retrograde cholangiopancreatography (ERCP);
- HPB co-location with Level 3 care is vital. Interventions by GI radiologists are frequent for HPB patients;
- Avoidance of patient transfer to another site – which would be necessary if GH did not provide the requisite imaging services. Thus the investment will deliver safer patient pathways and an improved patient experience – the right care in the right location at the right time.

Due to the staggered nature of this reconfiguration, the IR departments will be required to provide services on all three sites in four locations. Each IR department has an essential requirement for daycase and recovery facilities. These areas require safe staffing at all times in order for the IR departments to operate. As the transfer of Urology and Nephrology is not associated with these planned service moves at this time, there is a requirement to provide IR services on GH and LGH simultaneously. In providing this the radiology department suffer inefficiencies in staffing provision in the short term.

There is also a need to dual run 2 departments and these need to be adequately stocked and all essential equipment to support the patients' intervention must be present. There can be no transfer of equipment from LGH to GH for the interim period as both departments will be fully operational at the same time.

UHL Clinical Support and Imaging CMG Service Level Objectives 2016/17 and 2017/18

The UHL Clinical Support and Imaging CMG Service Level Objectives relevant to this OBC include:

Table 33 - Clinical and Imaging CMG Service Level Objectives

Trust objective	Service objective	CMG service initiative	KPI / Outcome	Risks to achievement / interdependencies
Provide safe, high quality, patient centred health care	Identify existing gap and develop workforce plans / new models of working to deliver required standards	Develop and implement consistent 7-day working models	Delivery of 10 Keogh Standards, reduced incidents and complaints, increased uptake of 'Nerve Centre'	Financial affordability, ability to recruit to vacancies
Consolidate our status as provider of choice	Build on existing specialist expertise to develop international reputation, enhance research profile	Establish Forensic Imaging / Post Mortem CT service	Improve patient / carer experience and choice, increased market share, CIP delivery, increased research trials / income	Subject to agreement on funding by Councils, demand for a private patient service unknown
Provide safe, high quality, patient centred health care	Respond to increasing activity demands with sustainable solutions	Expand Imaging Consultant Workforce	Reduced waiting times, delivery of targets, Improved turnaround times, improved quality, reduced premium spend	Ability to recruit to vacancies in specialist areas, pace of demand outstrips recruitment

These objectives have provided an over-arching framework as developments within this OBC have been constructed and remain deliverable in the context of the overall ICU project.

UHL Imaging Services: Current Activity and Demand

Imaging services are provided across all three UHL sites and to all referrers and patient groups. Specialised imaging services are offered to all referrers and patient groups at the locations where the clinical services are based/in line with agreed patient pathways.

GP and out-patient activity for all modalities are provided on each site. The only restrictions are for examinations requiring specific machine specifications and/or clinical supervision. (These are normally aligned to the inpatient services provided on the site in question.)

Inpatient imaging services are provided on each site. They are supported by radiologists with specific specialist interests (e.g. cardiac radiologists based at GH, GI radiologists split between LRI and LGH).

Radiographic, nursing and support staffing is based upon machine opening hours and is dependent on:

- The complexity of procedures;
- The demand for individual modalities;

Imaging services are provided in all the main specialties at the Trust's Hospitals, for both adults and paediatrics, plus all sub-specialty services (including stress cardiac MR, vascular and renal interventional radiology and forensic CT). Services (except Breast Imaging and Nuclear Medicine) operate on a 24/7 basis depending on clinical urgency. IR has been provided on the GH site since the move of the vascular surgery service from LRI to GH in

May 2017 but does not provide any surplus capacity to support interventional radiography for HPB and Renal Transplant.

UHL imaging medical equipment includes:

- 9 multi-detector CT scanners;
- 9 magnetic resonance scanners;
- 6 cardiac catheter rooms;
- 4 interventional radiology rooms;
- 3 fluoroscopy rooms;
- A Hybrid Theatre.

There are also ultrasound, plain film (both computed (CR) and digital (DR) radiography), nuclear medicine and general fluoroscopy equipment at all three sites. Equipment support and the replacement programme is covered by the Managed Equipment Service (MES), provided by Asteral, until 2025/26.

Breast imaging supports screening and symptomatic services for Leicestershire. Mobile PET-CT facilities are provided under the Department of Health (DH) independent sector initiative.

UHL imaging services adhere to Royal College of Radiologists (RCR) guidance, ionising radiation legislation including IR (ME)R and IRR regulations. The department has passed recent inspections from HSE and DH in the compliance of these regulations, and aspires towards UKAS accreditation.

Demand and Capacity Modelling for Current Activity and Demand

Models of care take into account factors including patient type, specialty and modality. A detailed piece of work was undertaken by the Imaging team to determine the future state of activity across all three sites at an early stage in the project. The following considerations were:

- Access to all imaging sites and services ensures that all patient types from all referrers and locations have equal access to imaging services;
- Patients range from the fully ambulant to the clinically unstable. Access for out-patients including GP referrals is readily available;
- UHL ensures that reception areas can cope with any peaks in demand for imaging;
- Easy access to the main entrance and/or patients/visitor car parking facilities is important. Where possible, inpatients approach the department through separate access and have appropriate waiting areas to accommodate both ambulant and bed patients;
- The need for 24 hour access (with appropriate security restriction at night);
- The design solution is sensitive to differing cultural and religious requirements of the population, especially in terms of maintaining privacy and dignity.

UHL Imaging Services: Future Activity and Demand

Detailed capacity and demand planning was undertaken at an early stage in this project to assess the impact of moving Level 3 reliant activity between sites (and particularly which activity requiring IR) would move to GH.

The provision of IR on GH is required to support the move of HPB and vascular access inpatient services. Each service has a different requirement in terms of IR due to the variance of procedures undertaken across specialities.

Monitoring will continue to ensure that activities are performed at the relevant sites so as to meet clinical and organisational waiting times (independent of specialty sites except where supervised scanning/procedures are performed). The capacity being provided through this OBC represents re-provision of existing capacity – the key change proposed is the site of the IR rooms. There is no proposed increase in overall IR provision.

The following facilities will be developed on the GH site:

- Three IR rooms;
- An Interventional Ultrasound Scanner (USS) Room.

In summary, two IR rooms relocate from LGH to GH, with one of the rooms receiving new equipment as part of the Managed Equipment Service (MES) and one room at GH relocating to the new IR department. At the point that all moves are complete and Urology and Nephrology have moved from LGH, the remaining IR room will transfer from LGH to GH.

The existing USS area will be extended to reflect the transfer of increased ultrasound inpatient capacity, and the fluoroscopy room will become an interventional USS room to support the transferring workloads with HPB.

Specialty-specific pathways have been developed for HPB, Urology, Renal and Vascular to support the changes set out in this OBC.

2.12 Main Benefits Criteria

In the context of the outlined service strategies, the Trust's strategic objectives and the proposals incorporated with the STP, the SMART objectives for this project are detailed below, and are within the Benefits Realisations Plan attached at Appendix 9.

Satisfying the potential scope for this investment will deliver the following high-level strategic and operational benefits.

Table 34 - Investment Objectives and Benefits

Objectives		Measurement
A	To provide a solution that maximises clinical quality and safety.	Reduced DATIX incidents, associated with this group of patients, relating to serious harm
B	To deliver, at the earliest possible opportunity, a sustainable Level 3 ICU service across the Trust	Reduced elective cancellations Removal of risk for on-going provision of Level 3 service at LGH. 4 hour transfer time cross site for Level 3 patients.
C	To deliver an ICU solution that facilitates recruitment and enables the delivery of high levels of teaching and training.	Reduced staff turnover Reduced vacancy factors Reduced agency expenditure
D	To ensure that the quality of the patient environment and experience remains a priority	Increased single room provision Improved privacy and dignity Improved infection prevention.

Objectives		Measurement
E	To provide a solution which fits with future Trust reconfiguration plans and is consistency with the DCP	Timeline and sequencing of reconfiguration programme
F	To deliver a solution that ensures accessibility to services and maximises clinical adjacencies.	Delivers essential clinical adjacency and most of desirable.

The main 'dis-benefits' are as follows:

- Some separation of clinical service between two sites until the long term Reconfiguration Programme is complete;
- The requirement, for the duration of the full Reconfiguration Programme, of a retrieval service which ensures patients cared for at LGH requiring unplanned Level 3 ICU care can be safely transferred to GH or LRI.

2.13 Main Risks

The main business and service risks (design, build and operational over the lifespan of the scheme) associated with the scope for this project are shown below, together with their mitigations. Further details can be found within the full project risk register (Appendix 10).

Table 35 - Main Risks

Main Risk	Mitigation
Business Case	
Timescales are delayed to due to approval processes required for OBC and FBC	Business Cases will allow for the current programme and highlight how transitional costs and phasing will be managed
Inability to deliver the estates elements of the OBC/FBC within the required timescales.	Project Managers assigned to individual schemes, appointment of RLB to PMO the process.
Estates	
Inability to undertake enabling works to allow schemes to deliver on time	Solutions for enabling moves have been identified and agreed. Communication plan with those impacted in place.
Operational	
Clinical risk from the separation of services	Continued iteration of clinical operational polices and models of care through OBC, FBC and Operational commissioning of schemes.
Managing ICU demand and capacity during the construction period	Construction period to avoid forecast surge period as far as possible, plans to maintain flow from ICU with GH services agreed and in place together with contingency arrangements for ICU beds.
Workforce and OD	

Main Risk	Mitigation
Effective and sustainable medical cover across all sites for impacted services.	On-going workforce planning and rostering across all sites for all specialties with education and service leads. Plans being developed for the final model (full reconfiguration) with impact for interim solutions. Builds on work already commenced to move vascular from LRI to GH.
Destabilisation of services as a result of the change in location and adjacencies.	Commitment to provide and prioritise Organisational Development resource to support the project
Finance	
Increased non-recurrent revenue impact	Confirm and challenge process set up with all services to review and agree workforce implications. Led by Deputy Medical Director.

2.14 Constraints and Dependencies

The following outline the key constraints and dependencies associated with the delivery of this project and its component schemes.

- There will be multiple construction locations on GH site at the same time, with different constructors accessing the site simultaneously. This will require careful management for the associated workforce and deliveries to site to minimise the impact for staff and patients moving around the site on a daily basis;
- Multiple site compounds on GH at the same time will adversely impact on the provision and availability of parking for staff and potentially patients. There will be additional flexibility for staff in accessing both on-site and off-site car parks for GH, and the availability of on-site parking will be maximised as far as possible during the construction period;
- At various stages of construction there may be a requirement to find alternative hospital access points to support constructors' needs. These will be identified as soon as possible and a plan developed to manage the consequences;
- Construction work will take place both above and below live operational areas. A plan will be put in place to minimise disruption during working hours and monitor the situation with impacted operational areas;
- There is a requirement to ensure access can be provided at all times, through the construction period, to the GH main entrance, mortuary and pharmacy. This will be managed by identifying alternative routes, limiting disruption duration and use of out of hours working;
- The central operating department at GH is directly above the IR construction site. Noise and impact of vibration will be minimised during the working day. The impact on theatres will be monitored and assessed, with alternative plans put in place if necessary;
- Access to the IR area is dependent on the successful decanting of offices and medical records within their new facilities in the Snoezelen building and Mansion House. Delays in either the enabling work or the decanting will delay the commencement of construction for IR;

- Major electrical shutdowns will be required to provide the required infrastructure. This will be managed at an appropriate time to minimise disruption to clinical services and staff, and there will be communication across he site to ensure awareness, impact and timescales;
- Existing electrical and mechanical services will require relocating to provide a clear site for ward installation. This will be managed to minimise downtime and as far as possible prevent loss of clinical activity. Ventilation plant will be replaced with new compliant equipment which can be pre-installed thus minimising downtime;
- The completion of Emergency Floor Phase 2 at LRI which release space for the surgical wards to move from LGH;
- The outcome of the EMCHC consultation process which will confirm the solution for this service and enable to the Trust to progress its plans for the relocation of this service to LRI, which releases theatre capacity on GH site.

3. The Economic Case

3.1 Introduction

This chapter describes the options for delivering improved critical care provision on the Glenfield Hospital (GH) and Leicester Royal Infirmary (LRI) sites in terms of their relative benefits and costs. It highlights the preferred option after each shortlisted option has been appraised on a financial and non-financial basis. The Economic Case reflects the overall option of closing level 3 critical care at the Leicester General Hospital (LGH) and transferring associated services to the other two acute sites, and a 'Do Nothing' option.

3.2 Overall Economic Position for Critical Care

As part of the Economic Case, the Trust has reviewed its overall position in respect of transferring all services related to the provision of level 3 critical care services from the LGH to the LRI and the GH. A high level economic appraisal has been carried out which compares a 'Do Nothing' scenario with respect to the critical care facilities at the LGH with a scenario which moves critical care beds and associated services from the LGH to the LRI and GH. Whilst other options are possible, the preferred option is seen as the only one that is consistent with the Trust's long-term financial and clinical strategy of re-providing all acute services at the LRI and GH sites.

3.2.1 Non-Financial Appraisal

An options appraisal process was established to undertake the qualitative assessment of the following options:

- 'Do Nothing';
- Relocate level 3 ICU from LGH, as an overarching principle.

Whilst this Outline Business Case (OBC) is founded on 4 distinct schemes which consider the possible design solutions for each scheme, the individual schemes do not each consider the "do nothing" as the baseline position.

The options appraisal was carried out in October 2017, and included representation from the Clinical Management Groups (CMGs) (ITAPS & CHUGGS), Estates, Finance, Workforce and the Deputy Medical Director as Project Senior Responsible Officer (SRO).

The appraisal team viewed the advantages and disadvantages of each option as follows:

Table 36 - Benefits and Disadvantages of the Do Nothing Option

Option Description	Benefits	Disadvantages
Retention of Level 3 ICU and associated dependant services at LGH	Status quo could continue to be delivered, however this could only be maintained for a limited period of time due to issues with clinical sustainability (see section 2.4.1).	The service will eventually become clinically unsustainable, with a likely resultant impact of loss of level 3 and associated dependent services at the LGH.
		Impact on efficiency of General Surgery and HPB at the LGH.
		Does not align to the Trust's five year strategic plan and the LLR STP to consolidate acute services onto two sites (the LRI and the GH).
		Service delivery risk to continue to deliver the consultants rota (currently supported by locum posts), middle grade rota supported by Trust staff grades. Difficulty in recruiting to consultant Intensivist posts at LGH owing to the reduced acuity of patients; a two site rota would not be attractive to potential candidates.
		ICU training status lost at the LGH when it was assessed by the regional advisor. The reason for this was it cannot offer adequate case mix as it predominantly caters for elective patients. As a consequence, trainees have not been on this site for the last 5 years.
		Difficulties in recruiting to nursing posts at LGH owing to the National Shortage - staffing levels on an on-going basis are only able to support 7 of the 9 beds.

Table 37 - Benefits and Disadvantages of the Relocation of Level 3 Services option

Option Description	Benefits	Disadvantages
Transfer of Level 3 ICU and associated dependant services from LGH to LRI and GH.	Supports the long-term reconfiguration for other services, in line with the Trust's five year strategic plan and the LLR STP.	Transfer of more patients across site owing to the need to transfer level 3 emergency patients off the LGH site than currently to the Level 3 service at the LRI and GH.
	In line with long-term ICU strategy to deliver 2 larger ICU units; in line with robust activity modelling - which offer an improved level of flexibility associated with larger units.	
	Reduced revenue implications due to reduction in the use of locums to support the LGH service.	Creates a split site service for some support services, although this inefficiency currently exists as the status quo.
	Delivers more of an elective / emergency split, with a reduced emergency workload at LGH. This helps to protect elective activity from cancellation at times of high emergency demand.	Creates a tipping point for need to deliver the final reconfiguration solution (moving off the LGH).
	Provides a small improvement in physical ICU bed numbers between the 2 sites, with improved occupancy levels.	Will be some cost consequences of on-going double running of Level 2 HDU at LGH which is less efficient than moving the entire ICU to the LRI and GH.
	Reduced investment in backlog spends at	Ability to staff LGH level 2 HDU

Option Description	Benefits	Disadvantages
	LGH with reduced use of space.	only in the longer term will become more difficult since it will become a less attractive site to work on.
	Improved recruitment and retention for co-located surgical services at GH and LRI.	Possible difficulties in the recruitment and retention of staff for those services remaining at LGH until the long-term reconfiguration plans can be delivered.

Benefits Criteria

The Project Board has agreed criteria consistent with that used when options for critical care were initially reviewed in 2015. The criteria are aligned to the Trust's strategic objectives and reflect the key principles within UHL's clinical strategy of delivering high quality care for all, providing patient-centred care, optimising clinical adjacencies and ensuring services are provided in a sustainable way.

These are described as follows:

Table 38 - Detailed Benefits Criteria

Objectives		Measurement (the degree to which an option is likely to result in)
A	To provide a solution that maximises clinical quality and safety whilst remaining consistent with future configuration	*An acute configuration of services that maximises clinical affinities and critical adjacencies minimises clinical risk*
B	To provide an efficient and effective solution for the immediate ICU requirement	*Extra capacity to accept Level 2 and Level 3 activity moving from other sites, enabling reduction in cancellation*
C	To allow staffing pressures to be minimised in delivering the solution	*Ease of effective staffing cover*
D	To ensure that the quality of the patient environment and experience remains a priority	*Enhanced patient experience, safety in terms of infection control and prevention and improvement in the quality of the patient environment; privacy and dignity; single sex areas; single rooms*
E	To deliver a solution that is achievable and delivers the required capacity within an appropriate timescale	*Achievement of timescale of conversion works/interdependencies*
F	To deliver a solution that ensures accessibility to patients	*Clinical adjacencies and an acceptable overall patient journey*

The weightings that have been applied are as follows:

Table 39 - Benefit Criteria Weighting

Criteria	Weight
Clinical Quality and Configuration	30%
Efficiency and Effectiveness	15%
Staffing	15%
Quality of the Patient Environment	15%
Achievability	15%
Accessibility	10%
TOTAL WEIGHTING	**100%**

Key to the development of the ICU project and other reconfiguration projects is clinical quality and configuration. The weightings above, which were agreed by the Project Board, therefore address the requirement to maintain and improve clinical quality, but also take account of the requirement to maintain consistency with the Trust's and the STP's aims to reconfigure acute services across two sites, and ensure our interim developments provide an incremental step towards the delivery of our long term plans. Other criteria are deemed to be of equal value except accessibility, which from a geographical perspective is similar in most options as these services are maintained within the city of Leicester.

Scoring

The Appraisal Team, including the Deputy Medical Director (Project SRO), CMG management and clinical representatives, estates team members and other project team members, scored the options as follows:

Table 40 - Weighted Scores: ICU Project

Criteria	Weighting	Non Weighted score out of 10		Weighted Scores	
		Do Nothing	Option 1	Do Nothing	Option 1
Clinical Quality and Configuration	30	1.0	8.5	30	255
Efficiency and Effectiveness	15	0.0	10.0	0	150
Staffing	15	2.5	6.5	38	98
Quality of the Patient Environment	15	3.0	8.0	45	120
Achievability	15	10.0	6.0	150	90
Accessibility	10	3.5	8.0	35	80
Total	**100**	**20**	**47**	**298**	**793**

3.2.2 Financial Appraisal

The Financial Appraisal has been based on the following assumptions.

Do Nothing Scenario

The Do Nothing scenario reflects the loss of critical care income at the LGH. In this scenario the Trust would clearly make revenue savings in relation to the revenue associated with the reduction in activity, which is assumed to be phased over a period of 5 years. There will also be a decline in inpatient activity as a result of the requirement for some procedures to have a close proximity to a critical care bed. For the purposes of the economic appraisal the baseline income has been taken as a proxy for the baseline cost. This includes all critical care income and a proportion of inpatient income. The eventual savings from the loss of critical care activity relate to the direct staff, non-pay and facilities management (FM) costs. The savings on the reduction of inpatient activity have been assumed at a 30% marginal rate. This is demonstrated in Table 41 below.

Table 41 - Do Nothing Costs

Income Loss per annum	£'000
Loss of Income due to Closure of LGH ITU	4,734
Loss of Income due to Closure of LGH ITU (PACU)	709
Loss of Income due to Closure of LGH HDU	3,945
Sub-total	**9,388**
Loss of Inpatient activity income due to closure of ITU and HDU	15,984
Grand Total Income Loss	**25,372**
Potential Savings	
Potential medical and nursing staff cost saving	3,496
Non Pay	939
FM and Estates	250
Marginal Cost of Inpatient Services	4,795
Total Savings	**9,480**
Total Loss	**15,892**

For the purposes of the economic case the loss highlighted above has been added to the baseline cost of critical care in the Do Nothing Scenario.

3.2.3 Costs of Relocation on to LRI and GH

The critical care baseline costs reflect the direct cost of providing critical care across the three sites and the cost of critical care related inpatient work at the LGH which is and will be affected by the critical care moves. These are based on the preferred option for each element of the scheme, the details of which are discussed in sections 3.3 – 3.6 for each appraisal. The key figures for each of these are as follows:

Table 42 - Critical Care Additional Costs

Description	Costs
Capital Costs	£30.8m
Capital Costs for GEM	£24.923m
Lifecycle Costs	£49,321m over 60 operational years
Clinical Workforce Costs	£1.647m pa FYE non recurrent (until 2023 when reconfiguration is complete),
FM costs	£765k per year net additional recurrent costs
MES Related Costs	£37k per year with an increase in balloon payment at contract closure of £67k

3.2.4 Risk Assessment

Both options have been risk assessed over the appraisal period of 62 years (2 years construction and 60 years building life). The risks have been split into the standard DH risk categories and are summarised as follows:

Table 43 - ICU Project Risk Assessment

Risk Summary (NPC)	Do Nothing £'000	Option 1 £'000
Construction Risks	0	1,399
Performance Risks	595	1,830
Operating Risks	23,227	32,695
Total	**23,823**	**35,924**

Although the loss of activity at the LGH has been assessed from a risk perspective, the additional risks reflect the potential for increased costs in respect of maintaining the remaining services at the LGH.

3.2.5 Summary of the Overall Financial Appraisal

The costs identified above, and the baseline costs of critical care and inpatient services at the LGH, have been input into the DH Generic Economic Model (GEM). The resultant outputs from the GEM are as follows:

Table 44 - Net Present Cost (NPC) and Equivalent Annual Cost (EAC) of each option

	Net Present Cost £'000		Equivalent Annual Cost £'000	
	Do Nothing	Option 1	Do Nothing	Option 1
GEM Generated NPC/ EAC	1,877,164	1,576,885	70,789	59,465
Risk Adjustment	23,823	35,924	898	1,355
Risk Adjusted NPC/EAC	**1,900,987**	**1,612,809**	**71,687**	**60,820**

The full GEM can be found at Appendix 11.

The Do Nothing Option is significantly more expensive than the proposed developments for critical care.

Sensitivities and Switching Values

A key sensitivity will be in the event that the overall Reconfiguration Programme is delayed or stopped completely. If site reconfiguration (consolidation to two sites) never happens, the NPCs and EACs for each option are as follows:

Table 45 - NPC and EAC of each option, assuming overall site reconfiguration does not happen

	Net Present Cost £'000		Equivalent Annual Cost £'000	
	Do Nothing	Option 1	Do Nothing	Option 1
GEM Generated NPC/ EAC	1,877,164	1,611,468	70,789	60,769
Risk Adjustment	23,823	35,924	898	1,355
Risk Adjusted NPC/EAC	**1,900,987**	**1,647,392**	**71,687**	**62,124**

In order for the Do Nothing option to be identified as the Preferred Option, the loss of income associated with this option would have to be overestimated by circa 500%.

In order for the critical care move option to not be identified as the Preferred Option, the additional revenue costs associated with this option would have to increase by circa 11,000%.

Neither of these scenarios are considered to be possibilities.

3.2.6 Combining the Non-Financial and Financial Appraisals

The combination of the non-financial and financial appraisals gives the following positions:

Table 46 - Combined ICU Project Scores

	Net Present Cost		Equivalent Annual Cost	
	Do Nothing	Relocation of ICU	Do Nothing	Relocation of ICU
GEM Generated NPC/ EAC £'000	1,877,164	1,576,523	70,789	59,452
Risk Adjustment NPC/EAC £'000	23,823	35,924	898	1,355
Risk Adjusted NPC/EAC £'000	**1,900,987**	**1,612,447**	**71,687**	**60,806**
Benefits score	298	793	298	793
Cost Per Benefit Point £'000	**6,390**	**2,035**	**241**	**77**

On a cost per benefit point basis, the relocation of ICU and associated services scores over 3 times more preferably than the Do Nothing scenario, and is therefore clearly the preferred option.

3.2.7 Identification of Preferred Options

The following sections outline the process undertaken in identifying the preferred options for the delivery of the 4 key projects comprised within this OBC:

- Interim ICU;
- Interventional radiology;
- GH Wards;
- LRI Wards.

3.3 Interim ICU Expansion – Glenfield Hospital

3.3.1 Non-Financial Appraisal

The options to provide expanded critical care level 3 capacity at Glenfield Hospital were assessed in the 2015 business case in terms of the requirement to provide a minimum of nine additional physical bed spaces. Activity modelling has shown that this is the minimum number that would be required to deal with variations in activity levels once HPB and Transplant have moved onto the site. It was also deemed that co-location of these additional bed spaces with the existing ICU was crucial to ensure that they were utilised in the most efficient, effective and safe way possible.

Whilst a long list was created, given the restrictions around current space on the GH site and the need to retain an efficient and safe configuration, the only options that can deliver the requisite space for GH are new build solutions. This resulted in a short list of 3 options as follows:

Table 47 - ICU Expansion GH Options

Option	Description
New build Option 1	New build expansion into courtyard adjacent to current ICU bay
New build Option 2	New build areas at several proposed locations around the outskirts of the current ICU department
New build Option 3	New build area that allows the direct expansion of Bay B and increases the size of the existing unit.

Table 48 - ICU Expansion GH Weighted Scores

Criteria	Weighting	Raw Scores			Weighted Scores		
		Option 1	Option 2	Option 3	Option 1	Option 2	Option 3
Clinical Quality and Configuration	30	9	9	9	270	270	270
Efficiency and Effectiveness	15	4	3	5	60	45	75
Staffing	15	4	3	5	60	45	75
Quality of Patient Environment	15	11	11	15	165	165	225

Criteria	Weighting	Raw Scores			Weighted Scores		
		Option 1	Option 2	Option 3	Option 1	Option 2	Option 3
Achievability	15	3	3	3	45	45	45
Accessibility	10	14	13	15	140	130	150
Total	**100**	**45**	**42**	**52**	**740**	**700**	**840**

The scores are largely driven by:

- Factors around the required area (which precluded consideration of Option 1 within the existing courtyard area);
- Consideration of the patient environment (all options except for Option 3 saw a reduction in natural light entering the unit);
- Ease of staffing cover (all options except for Option 3 produced a build which would not provide adequate sight lines for clinical observation without the need for additional staff).

Option 3 is the only solution which delivers a suitable environment for the number of beds required.

3.3.2 Financial and Economic Appraisal

The options were then subjected to a financial appraisal. The options were considered over a period of 62 years (two years construction and 60 years building life). The financial appraisal reflects the following:

- Capital costs (excluding VAT) for each option on each site including equipment;
- Lifecycle costs;
- Revenue workforce costs for each site.

Capital Costs

Capital costs for each option are shown below:

Table 49 - ICU Expansion GH Capital Costs

	ICU Option 1 (£)	ICU Option 2 (£)	ICU Option 3 (£)
Departmental Costs	1,245,000	2,331,000	2,670,302
On Costs	134,750	189,050	133,515
Works cost	1,379,750	2,520,050	2,803,817
Provisional Location Adjustment	0	0	0
Sub total	1,379,750	2,520,050	2,803,817
Fees	481,964	481,964	481,963
Non Works Cost	0	0	0

	ICU Option 1 (£)	ICU Option 2 (£)	ICU Option 3 (£)
Equipment Cost	580,000	580,000	580,000
Planning Contingency	110,932	202,612	225,427
Optimism Bias	186,343	276,278	298,658
Total Outturn	2,738,989	4,060,904	4,389,865
Less Planning Contingencies	(110,932)	(202,612)	(225,427)
Input into GEM	2,628,057	3,858,292	4,164,438

Option 3 was identified as the preferred option when initially appraised in 2015. Option 3 has since been extensively reviewed, and has been revised to allow for inflation, inclusion of infrastructure costs and subsequent changes in fees and contingencies. Nothing has materially changed in Options 1 and 2; therefore they have been altered on the same basis. (Options 1 and 2 have been produced by the Trust's estates team).

The Trust has not used the optimism bias formula developed by the DH but has assessed the optimism bias on the following:

- Project type, duration and complexity;
- Stage of design and procurement strategy;
- Project risk profile and how these may be assigned in line with procurement strategy i.e. D&B, Traditional etc;
- Form of contract i.e. JCT / NEC and mechanism / incentives within to manage risk;
- Known construction risks, including those likely to be encountered within existing estate and those that are synonymous with the construction type;
- Known project risks, including equipment, fees and VAT recovery;

This approach has been discussed and agreed with NHSI.

Lifecycle Costs

Lifecycle costs are derived from the capital costs reflecting replacement of individual elements of the capital scheme. These have been derived from a generic formula based on the initial capital costs. Equipment has been assumed to be replaced every 10 years.

Revenue Costs

Current critical care expenditure at the LGH has been used in developing the revenue costs. This is based on the critical care income generated by the Trust from the services based at the LGH. This is a good proxy for the critical care costs (excluding non-operating costs).

Changes in Revenue Costs

The following changes in costs have been assessed as being necessary to deliver the scheme:

Table 50 - ICU Expansion GH Changes in Workforce Revenue Costs

Glenfield Medium Term Critical Care Additional Costs	WTE	£'000
Consultant Anaesthetist	1.00	117
Net additional middle grades	3.00	220
Additional medical staff to support retrieval service	2.00	140
Additional Critical Care Ward Staff to support separate HDU	4.00	148
Total	**10.00**	**625**

There is a requirement for 10 additional consultant Planned Activities (PAs) resulting from the inefficiency of overseeing a smaller unit at the LGH and to support the retrieval service that needs to be enhanced to cover the additional transfers from the LGH to the Glenfield and LRI ICUs. In addition to the additional PAs there is a need for two Clinical fellows to support the retrieval service.

As a result of the overall reconfiguration of ICU there is requirement for additional revenue in relation to critical care nursing to support the isolated 6 bedded annex at the LRI. Although the HDU staffing has been assumed to be 1 staff to 2 beds, allowance has been made for additional staff to cover any absences from the ward as a result of patient movements.

The additional space required will increase the need for FM costs. A sum of £299,000 has been allowed for.

Risk

Options have been risk assessed over the appraisal period of 62 years (two years construction and 60 years building life). The risks have been split into the standard DH risk categories and are summarised as follows:

Table 51 - ICU Expansion GH Risk Assessment

Risk Summary (NPC)	Option 1 £'000	Option 2 £'000	Option 3 £'000
Construction Risks	107	196	218
Performance Risks	235	295	310
Operating Risks	3,830	3775	3,775
Total	**4,172**	**4266**	**4,303**

Summary of Financial Appraisal

The costs identified above have been input into the DH Generic Economic Model. The result outputs from the GEM are as follows:

Table 52 - ICU Expansion GH Net Present Cost and Equivalent Annual Cost of each option

Appraisal Summary - ICU	Net Present Cost £'000			Equivalent Annual Cost £'000		
	Option 1	Option 2	Option 3	Option 1	Option 2	Option 3
GEM Generated Cost	310,550	312,406	312,868	11,711	11,781	11,798
Risk Adjustment	4,172	4,266	4,303	157	161	162
Risk Adjusted NPC/EAC	**314,722**	**316,672**	**317,171**	**11,868**	**11,942**	**11,961**

The GEM for the ICU expansion at GH can be found at Appendix 12.

From a financial perspective Option 1 is marginally preferable to the other options. The difference between Option 1 and 2 is 0.6% and between Option 1 and 3 is 0.8%. The primary driver is the capital cost for each option as the revenue elements are exactly the same, therefore the most financially advantageous option will always be the one with the lowest capital cost.

3.3.3 Combining the Non-Financial and Financial Appraisals

The combination of the non-financial and financial appraisals gives the following positions:

Table 53 - ICU Expansion GH Combined Scores

Appraisal Summary - ICU	Net Present Cost £'000			Equivalent Annual Cost £'000		
	Option 1	Option 2	Option 3	Option 1	Option 2	Option 3
GEM Generated NPC	310,550	312,406	312,868	11,711	11,781	11,798
Risk Adjustment	4,172	4,266	4,303	157	161	162
Risk Adjusted NPC	314,722	316,672	317,171	11,868	11,942	11,961
Benefits score	740	700	840	740	700	840
Cost Per Benefit Point	**425.30**	**452.39**	**377.58**	**16.04**	**17.06**	**14.24**

When combining the financial and non-financial appraisals, Option 3 emerges as the preferred option, being 12.3% better than Option 1. The benefits score would need to reduce to 746 for Option 3 not to be the preferred option, conversely the capital related costs of Option 3 would need to increase by 500% for it not to be the preferred option.

3.3.4 Medium Term Critical Care Unit Preferred Option

The above analysis concludes that Option 3, a new build expansion into Bay B, increasing the size of the existing unit is the preferred option.

3.4 Interventional Radiology – Glenfield Hospital

3.4.1 Non-Financial Appraisal

A number of options exist for the delivery of the proposed reconfiguration. Options were first generated through a detailed analysis of the Glenfield Hospital site; these options were then assessed with Imaging and Estates staff to ensure that a full qualitative benefits appraisal was undertaken. A key constraint in reviewing these options was ensuring continuity between this appraisal and the longer term site reconfiguration, both in terms of capital cost and strategic location.

The options initially explored for each site are as follows:

Table 54 - Interventional Radiology GH Site Options Explored

Option	Description
A. New Build Outside of Imaging	Construction of new capacity outside of the main entrance to the Glenfield Hospital
B. New Build at Ivydene House	Construction of new capacity on the site of Ivydene House at Glenfield Hospital
C. New Build in South Entrance Staff Car Park	Construction of new capacity in the car park adjacent to the South Entrance at Glenfield Hospital
D1. Refurbishment of Medical Records and Offices – void space unutilised	Conversion of Medical Records and office space, adjacent to existing Imaging space
D2. Refurbishment of Medical Records and Offices – void space utilised	Conversion of Medical Records and office space, adjacent to existing Imaging space, utilising a courtyard void area

The options have been appraised and scored as follows:

Table 55 - Interventional Radiology GH Weighted Scores

Criteria	Weighting	Raw Scores					Weighted Scores				
		Option A	Option D1	Option D2	Option B	Option C	Option A	Option D1	Option D2	Option B	Option C
Clinical Quality and Configuration	30	8	10	10	6	6	240	300	300	180	180
Efficiency and Effectiveness	15	5	5	5	5	5	75	75	75	75	75
Staffing	15	3	5	5	1	1	45	75	75	15	15
Quality of Patient Environment	15	14	15	15	12	12	210	225	225	180	180
Achievability	15	3	5	4	2	1	45	75	60	30	15
Accessibility	10	9	15	15	6	3	90	150	150	60	30
Total	**100**	**42**	**55**	**54**	**32**	**28**	**705**	**900**	**885**	**540**	**495**

3.4.2 Financial and Economic Appraisal

The options were then subjected to a financial appraisal. Options B and C were not financially appraised as a result of failing to achieve the minimum satisfactory scores, scoring significantly worse than the other options.

The options were considered over a period of 62 years (2 years construction and 60 years building life). The financial appraisal reflects the following:

- Capital costs (excluding VAT) for each option on each site including equipment;
- Lifecycle costs;
- Revenue workforce costs for each site.

Capital Costs

Capital costs for each option are shown below:

Table 56 - Interventional Radiology GH Capital Costs

Capital Costs (excluding VAT)	IR Option A (£)	IR Option D1 (£)	IR Option D2 (£)
Departmental Costs	3,500,643	2,393,191	2,850,710
On Costs	1,325,064	1,214,319	1,260,071
Works cost	4,825,707	3,607,510	4,110,781
Provisional Location Adjustment	0	0	0
Sub total	4,825,707	3,607,510	4,110,781
Fees	693,837	693,834	693,837
Non Works Cost	0	0	0
Equipment Cost	360,000	360,000	360,000
Planning Contingency	437,497	290,044	369,963
Optimism Bias	506,097	361,452	401,144
Total Outturn	6,823,137	5,312,840	5,935,725
Less Planning Contingencies	(437,497)	(290,044)	(369,963)
Input into GEM	6,385,641	5,022,796	5,565,762

Option D1 was identified as the preferred option during the initial appraisal of options in 2015. Since then, Option D1 has been reviewed, and revised to allow for inflation, inclusion of infrastructure costs and subsequent changes in fees and contingencies. Option A and D2 have been altered on the same basis, as nothing has materially changed. Options A and D2 have been produced by the Trust's estates team. The Trust has not used the optimism bias formula developed by the DH but has assessed the optimism bias on the following:

- Project type, duration and complexity;
- Stage of design and procurement strategy;
- Project risk profile and how these may be assigned in line with procurement strategy i.e. D&B, Traditional etc;

- Form of contract i.e. JCT / NEC and mechanism / incentives within to manage risk;
- Known construction risks, including those likely to be encountered within existing estate and those that are synonymous with the construction type;
- Known project risks, including equipment, fees and VAT recovery;

This approach has been discussed and agreed with NHSI.

Lifecycle Costs

Lifecycle costs are derived from the capital costs reflecting replacement of individual elements of the capital scheme. These have been derived from a generic formula based on the initial capital costs. Equipment has been assumed to be replaced every 10 years.

Revenue Costs

The costs related to imaging across all sites have been used in developing the revenue costs baseline

Changes in Revenue Costs

The following changes in costs have been assessed as being necessary to deliver the scheme:

Table 57 - Interventional Radiology GH Changes in Workforce Revenue Costs

Interventional Radiology (IR) Additional Costs	WTE	£'000
Additional IR Nursing	5.86	177
Staff to provide extended non IR out of hours service at the Glenfield Hospital	2.10	82
Additional medical staff to provide IR service on all three sites including provision for additional on call	0.50	81
Total	**8.46**	**340**

Additional costs have been assumed as a result of providing Interventional Radiology for General Surgery over split sites in the interim period, as the efficiency of the LGH IR department becomes eroded as we progress with the overall Reconfiguration Programme, until we come off the LGH site completely. In addition to this it has been assumed that there will be extended hours in respect of the provision of MRI and CT services to match that currently provided at the LGH.

In all options an allowance for additional FM costs at the Glenfield Hospital has been made. This is offset by some savings for the LGH site. The net impact of this is £250,000. Option D1 will also incur £18,000 non-recurrent costs as a result of the medical records relocation.

Additional costs allowed for in Option A result from the disparate location of interventional radiology rooms and the consequent double running costs. The additional costs will not be incurred after 2019 when the Trust consolidates onto two sites.

The additional new build space in Option A will increase the need for FM and associated costs. A sum of £100,000 has been allowed for this, based on a cost of £320 per m^2.

Changes in the service payment for the Managed Equipment Service (MES) reflecting the early replacement of equipment at the LGH and the subsequent double running of that equipment have been allowed for. This is an additional cost of £37,000 in all options.

Risk

Options have been risk assessed over the appraisal period of 62 years (two years construction and 60 years building life). The risks have been split into the standard DH risk categories and are summarised as follows:

Table 58 - Interventional Radiology GH Risk Assessment

Risk Summary (NPC)	Option A £'000	OptionD1 £'000	OptionD2 £'000
Construction Risks	368	289	321
Performance Risks	421	355	382
Operating Risks	7,121	7054	7,054
Total	**7,910**	**7699**	**7,757**

Summary of Financial Appraisal

The costs identified above have been input into the DH Generic Economic Model. The result outputs from the GEM are as follows:

Table 59 - Interventional Radiology GH Net Present Cost and Equivalent Annual Cost of each option

Appraisal Summary - ICU	Net Present Cost £'000			Equivalent Annual Cost £'000		
	Option A	Option D1	Option D2	Option A	Option D1	Option D2
GEM Generated EAC	619,383	614,723	615,284	23,357	23,182	23,203
Risk Adjustment	7,910	7,699	7,757	298	290	293
Risk Adjusted EAC	**627,292**	**622,422**	**623,040**	**23,656**	**23,472**	**23,495**

The GEM for Interventional Radiology at GH can be found at Appendix 13.

From a financial perspective Option D1 is marginally preferable to Option D2. The difference between these two options is 0.1% which is insignificant and means that a marginal change in capital costs would switch the financial appraisal.

Combining the Non-Financial and Financial Appraisals

The combination of the non-financial and financial appraisals gives the following positions:

Table 60 - Interventional Radiology GH Combined Scores

Appraisal Summary - IR	Net Present Cost £'000			Equivalent Annual Cost £'000		
	Option A	Option D1	Option D2	Option A	Option D1	Option D2
GEM Generated EAC	619,383	614,723	615,284	23,357	23,182	23,203
Risk Adjustment	7,910	7,699	7,757	298	290	293
Risk Adjusted EAC	627,292	622,422	623,040	23,656	23,472	23,495
Benefits score	705	900	885	705	900	885
Cost Per Benefit Point	**890**	**692**	**704**	**33.55**	**26.08**	**26.55**

When combining the financial and non-financial appraisals, Option D1, refurbishment of medical records and offices – void space unutilised, emerges as the preferred option. Option D1 is 1.8% better than option D2. The benefits score for D1 would need to reduce to 883 before D2 became the preferred option.

3.4.3 Interventional Radiology Preferred Option

The above analysis concludes that Option D1 (Conversion of Medical Records and Office space adjacent to existing Imaging space) is the preferred option.

3.5 Additional Beds – Glenfield Wards

3.5.1 Non-Financial Appraisal

In 2015, the Trust had assumed that it would be able to make use of existing wards to accommodate Renal Transplant and HPB activity at the Glenfield site. This was underpinned by the Leicestershire health economy's aim to reduce acute beds by circa 400 resulting from a number of workstreams, including the left shift of activity. However since the original business case was developed, these assumptions have not come to fruition and the health economy has consequently revised its assumptions and trajectory for beds. As a result there is a requirement for additional beds on the Glenfield site. In recognition of the GH Development Control Plan, and acknowledging the need not to undermine the potential for a large new build facility on the front of the GH Site, new options have been developed which reflect new build construction for the HPB wards. In addition, in 2015, the ward solution for the Transplant Ward utilised the "respiratory" office corridor on the Ground Floor near to the South Entrance. This has been reviewed and has subsequently been discounted as a result of the need for unacceptable derogations against HBNs and HTMs. This has resulted in a new build solution required for both the HPB and the Transplant wards (total of 3 wards).

The options considered were as follows:

Table 61 - Additional Beds GH Options

Option	Description
Option 1	New build development situated on a newly developed 3rd Floor of the main GH building, on top of existing wards 24, 25 and 26
Option 2	A 3 Storey development situated externally to the rear of the main hospital building near to Wards 19 and 20 - linked to the main hospital building via a new corridor at first floor level

The options have been appraised and scored as follows:

Table 62 - Additional Beds GH Weighted Scores

Criteria	Weighting	Raw Scores		Weighted Scores	
		Option 1	Option 2	Option 1	Option 2
Clinical Quality and Configuration	30	9	8	270	240

Efficiency and Effectiveness	15	10	10	150	150
Staffing	15	7	7	98	98
Quality of the Patient Environment	15	10	10	150	150
Achievability	15	4	2	60	30
Accessibility	10	8	6	80	60
Total	**100**	**48**	**43**	**808**	**728**

The outcome of the options appraisal was that Option 1 scored significantly better than Option 2 in terms of achievability and accessibility, reflecting an overall differential of 11%.

3.5.2 Financial and Economic Appraisal

The options were then subjected to a financial appraisal. The options were considered over a period of 62 years (2 years construction and 60 years building life). The financial appraisal reflects the following:

- Capital costs (excluding VAT) for each option on each site including equipment;
- Lifecycle costs;
- Revenue workforce costs for each site.

Capital Costs

Capital costs for each option are shown below.

Table 63 - Additional Beds GH Capital Costs

Capital Costs (excluding VAT)	Glenfield Wards Option 1 £	Glenfield Wards Option 2 £
Departmental Costs	10,062,386	11,320,986
On Costs	503,119	566,049
Works cost	10,565,505	11,887,035
Provisional Location Adjustment	0	0
Sub total	10,565,505	11,887,035
Fees	1,407,232	1,407,233
Non Works Cost	0	0
Equipment Cost	1,267,861	1,426,444
Planning Contingency	849,467	955,718
Optimism Bias	1,028,525	1,144,379
Total Outturn	15,118,590	16,820,809
Less Planning Contingencies	(849,467)	(955,718)
Input into GEM	14,269,123	15,865,091

The Trust has not used the optimism bias formula developed by the DH but has assessed the optimism bias on the following:

- Project type, duration and complexity;
- Stage of design and procurement strategy;
- Project risk profile and how these may be assigned in line with procurement strategy i.e. D&B, Traditional etc;
- Form of contract i.e. JCT / NEC and mechanism / incentives within to manage risk;
- Known construction risks, including those likely to be encountered within existing estate and those that are synonymous with the construction type;
- Known project risks, including equipment, fees and VAT recovery;

This approach has been discussed and agreed with NHSI.

Lifecycle Costs

Lifecycle costs are derived from the capital costs reflecting replacement of individual elements of the capital scheme. These have been derived from a generic formula based on the initial capital costs. Equipment has been assumed to be replaced every 10 years.

Revenue Costs

The current costs related to HPB and Renal Transplant have been used to develop the revenue costs baseline.

Changes in Revenue Costs

The following changes in costs have been assessed as being necessary to deliver the scheme:

Table 64 - Additional Beds GH Changes in Workforce Revenue Costs

Glenfield Ward Additional Costs	WTE	£'000
Pharmacy GH	4.50	105
Dietetics	0.60	16
Additional consultant resource to cover HPB Rota (split from Urology)	0.15	17
Additional emergency theatre cost (Glenfield)	10.13	292
Reduction in Anaesthetic PAs	(2.5)	(303)
Total	**12.88**	**128**

Additional costs reflect the need to support significantly greater inpatient activity through the pharmacy at the GH, with limited ability to offset this by a reduction in the LGH inpatient service since it already works at minimum safe staffing levels. The additional resource into Glenfield theatres reflects the additional non-elective work transferring over particularly in respect of HPB. In all options an allowance for additional FM costs at the Glenfield Hospital has been made. This is offset by some savings for the LGH site. The net impact of this is £248,000.

Risk

Options have been risk assessed over the appraisal period of 62 years (two years construction and 60 years building life). The risks have been split into the standard DH risk categories and are summarised as follows:

Table 65 - Additional Beds GH Risk Assessment

Risk Summary	Option 1 £'000	Option 2 £'000
Construction Risks	820	911
Performance Risks	959	1,036
Operating Risks	8,133	8,133
Total	**9,911**	**10,080**

Summary of Financial Appraisal

The costs identified above have been input into the DH Generic Economic Model. The result outputs from the GEM are as follows:

Table 66 - Additional Beds GH Net Present Cost and Equivalent Annual Cost of each option

Financial Appraisal Summary Glenfield Beds	Net Present Cost £'000		Equivalent Annual Cost £'000	
	Option 1	Option 2	Option 1	Option 2
GEM Generated NPC	454,934	457,585	17,156	17,256
Risk Adjustment	9,911	10,080	374	380
Risk Adjusted NPC	**464,846**	**467,665**	**17,530**	**17,636**

The GEM for the additional beds at GH can be found at Appendix 14.

From a financial perspective, Option 1 is marginally (0.6%) better than Option 2.

Combining the Non-Financial and Financial Appraisals

The combination of the non-financial and financial appraisals gives the following positions:

Table 67 - Additional Beds GH Combined Scores

Appraisal Summary - GH Beds	Net Present Cost £'000		Equivalent Annual Cost £'000	
	Option 1	Option 2	Option 1	Option 2
GEM Generated NPC	454,934	457,585	17,156	17,256
Risk Adjustment	9,911	10,080	374	380
Risk Adjusted NPC	464,846	467,665	17,530	17,636
Benefits score	808	728	808	728
Cost Per Benefit Point	**575.66**	**642.84**	**21.71**	**24.24**

When combining the financial and non-financial appraisals, Option 1 emerges as the preferred option. Option 1 is 11.7% better than Option 2. The capital costs of Option 2 would need to reduce by 10% to be financially comparable with Option 1. If there was no capital expenditure on Option 1 it would still not be the preferred option when the non-financial appraisal is included.

3.5.3 Glenfield Beds Preferred Option

The above analysis concludes that Option 1 New Build development situated on a newly developed 3rd Floor on the GH site is the preferred option.

3.6 Additional Beds – LRI

3.6.1 Non-Financial Appraisal

Since the original business case was developed in 2015, the location of the transferring general surgical services from the LRI has been reviewed. This was necessitated by an increase in the overall bed numbers at the LRI, and the potential move of the East Midlands Congenital Heart Centre (EMCHC) to the LRI (should UHL be successful in retaining this service following the outcome of NHS England Consultation). As a result a revised option appraisal has taken place addressing the revised circumstances. A number of options have been long listed and discounted. The remaining shortlisted options are as follows:

Table 68 - Additional Beds LRI Options

Option	Description
Option 1	General Surgery (2 wards) relocate into Ward 7 Balmoral Level 3 and Ward 21, Balmoral Level 6. Medicine vacates Ward 21 and moves to Ward 33 and EDU transfers from Ward 7 to Phase 2 Emergency Floor when it becomes operational.
Option 3	Ward 19 (Paediatric Surgery) relocates to Ward 14 when the Children's Admissions Unit (currently occupying ward 14) relocates to the Emergency Floor (April 2018). General Surgery (1 ward) relocates to Ward 19 (Balmoral Level 6) and General Surgery (1 ward) relocates to Ward 21 when Ward 21 moves to ward 33.
Option 5	General Surgery (1 ward) relocates to Ward 15 when it relocates to Emergency Floor Phase 2. General Surgery (1 ward) relocates to Ward 21 when Ward 21 moves to ward 33.
Option 6	General Surgery (1 ward) relocates to Ward 15 when it relocates to Emergency floor Phase 2. General Surgery (1 ward) relocates to Ward 7, Level 3 Balmoral, when EDU relocates to Phase 2 Emergency Floor.
Option 9	General Surgery (1 ward) relocates to Ward 21 when Ward 21 moves to Ward 33 Balmoral Level 6, General Surgery (1 ward) relocates to Ward 16, Balmoral Level 5 and SAU Ward 8 relocates to Ward 15, Balmoral Level 5 forming a co-located surgical assessment unit.

The options have been appraised and scored as follows:

Table 69 - Additional Beds LRI Weighted Scores

Criteria	Weighting	Raw Scores					Weighted Scores				
		Option 1	Option 3	Option 5	Option 6	Option 9	Option 1	Option 3	Option 5	Option 6	Option 9
Clinical Quality and Configuration	30	7	6	6	5	9	195	165	180	135	270
Efficiency and Effectiveness	15	10	10	10	10	10	150	150	150	150	150

Criteria	Weighting	Raw Scores					Weighted Scores				
		Option 1	Option 3	Option 5	Option 6	Option 9	Option 1	Option 3	Option 5	Option 6	Option 9
Staffing	15	8	8	8	8	8	120	120	113	113	120
Quality of Patient Environment	15	7	7	7	7	7	100	100	100	100	100
Achievability	15	9	9	9	9	9	135	135	135	135	135
Accessibility	10	9	8	6	6	9	90	80	60	60	90
Total	**100**	**49**	**47**	**45**	**44**	**52**	**790**	**750**	**738**	**693**	**865**

Option 9 scored significantly better than all other options particularly in respect of clinical quality. Option 9 scored 9.5% better than the next best option (Option 1).

3.6.2 Financial and Economic Appraisal

The options were then subjected to a financial appraisal. The options were considered over a period of 62 years (two years construction and 60 years building life). The financial appraisal reflects the following:

- Capital costs (excluding VAT) for each option on each site including equipment;
- Lifecycle costs;
- Revenue workforce costs for each site.

Capital Costs

Capital costs for each option are shown below.

Table 70 - Additional Beds LRI Capital Costs

Capital Costs (excluding VAT)	LRI Wards Option 1,3,5,6 (£)	LRI Option 9 (£)
Departmental Costs	585,000	874,308
On Costs	29,250	43,715
Works cost	614,250	918,023
Provisional Location Adjustment	0	0
Sub total	614,250	918,023
Fees	240,092	240,091
Non Works Cost	0	0
Equipment Cost	73,710	110,163
Planning Contingency	49,386	73,809
Optimism Bias	71,353	97,972
Total Outturn	1,048,791	1,440,058
Less Planning Contingencies	(49,386)	(73,809)
Input into GEM	999,405	1,366,249

Options 1, 3, 5 and 6 all involve the refurbishment of two wards and at this stage are assumed to carry the same level of capital cost. Option 9 involves three ward refurbishments and these additional costs are reflected accordingly.

The Trust has not used the optimism bias formula developed by the DH but has assessed the optimism bias on the following:

- Project type, duration and complexity;
- Stage of design and procurement strategy;
- Project risk profile and how these may be assigned in line with procurement strategy i.e. D&B, Traditional etc;
- Form of contract i.e. JCT / NEC and mechanism / incentives within to manage risk;
- Known construction risks, including those likely to be encountered within existing estate and those that are synonymous with the construction type;
- Known project risks, including equipment, fees and VAT recovery;

This approach has been discussed and agreed with NHSI.

Lifecycle Costs

Lifecycle costs are derived from the capital costs reflecting replacement of individual elements of the capital scheme. These have been derived from a generic formula based on the initial capital costs. Equipment has been assumed to be replaced every 10 years.

Revenue Costs

The current costs related to General Surgery have been used in developing the revenue costs baseline.

Changes in Revenue Costs

The following changes in costs have been assessed as being necessary to deliver the scheme:

Table 71 - Additional Beds LRI Changes in Workforce Revenue Costs

LRI Ward Additional Costs	WTE	£'000
Additional Gynaecology consultant resource due to move of General Surgery	0.15	18
General Surgical Rota Junior Drs Additional CT[3]	1.00	63
Additional Ward Nursing	14.53	488
Savings from reduction in LGH emergency sessions	-5.10	-147
Additional LRI Emergency Sessions	4.58	132
Total	15.01	554

[3] No additional allowance has been made for the enhancement for the General Surgery Middle Grade Rota. Although there is a requirement for 2 additional posts the funding position for these posts needs to be confirmed.

The key additional costs relate to ward reconfiguration and a less cost effective way of delivering services due to the differing size of the wards at the LRI. The additional revenue costs have been assumed in all options.

In all options an allowance for additional FM costs has been made. This is offset by some savings for the LGH site. The net impact of this is a saving of £33,000.

Risk

Options have been risk assessed over the appraisal period of 62 years (two years construction and 60 years building life). The risks have been split into the standard DH risk categories and are summarised as follows:

Table 72 - Additional Beds LRI Risk Assessment

Risk Summary (NPC)	Option 1 £'000	Option 3 £'000	Option 5 £'000	Option 6 £'000	Option 9 £'000
Construction Risks	48	48	48	48	71
Performance Risks	197	197	197	197	215
Operating Risks	13,101	13,101	13,101	13,101	13,789
Total	**13,346**	**13,346**	**13,346**	**13,346**	**14,075**

Summary of Financial Appraisal

The costs identified above have been input into the DH Generic Economic Model. The result outputs from the GEM are as follows:

Table 73 - Additional Beds LRI Net Present Cost and Equivalent Annual Cost of each option

NPC	Option 1	Option 3	Option 5	Option 6	Option 9
GEM Generated NPC £'000	864,154	864,154	864,154	864,154	864,765
Risk Adjustment £'000	13,346	13,346	13,346	13,346	14,010
Risk Adjusted NPC £'000	877,500	877,500	877,500	877,500	878,775
EAC	Option 1	Option 3	Option 5	Option 6	Option 9
GEM Generated EAC £'000	32,588	32,588	32,588	32,588	32,611
Risk Adjustment £'000	503	503	503	503	528
Risk Adjusted EAC £'000	**33,091**	**33,091**	**33,091**	**33,091**	**33,139**

The GEM for the additional beds at the LRI can be found at Appendix 15.

From a financial perspective Option 9 is marginally (0.15%) worse than the other options.

Combining the Non-Financial and Financial Appraisals

The combination of the non-financial and financial appraisals gives the following positions:

Table 74 - Additional Beds LRI Combined Scores

Appraisal Summary - LRI Beds	Option 1	Option 3	Option 5	Option 6	Option 9
GEM Generated NPC £'000	864,154	864,154	864,154	864,154	864,765
Risk Adjustment £'000	13,346	13,346	13,346	13,346	14,010
Risk Adjusted NPC £'000	877,500	877,500	877,500	877,500	878,775
Benefits score	790	750	738	693	865
Cost Per Benefit Point	**1,111**	**1,170**	**1,190**	**1,267**	**1,016**

When combining the financial and non-financial appraisals, Option 9 emerges as the preferred option. Although it is a marginally worse option financially, it is not significant and it is significantly better non-financially. The additional costs are in relation to the additional ward being refurbished, and therefore sensitivity around the reduction in capital costs is not appropriate as any reduction in capital costs is likely to affect all options. The difference between Option 9 and the next best option is 9%.

3.6.3 LRI Beds Preferred Option

The above analysis concludes that Option 9: the refurbishment of Wards 15, 16 and 21 is the preferred option.

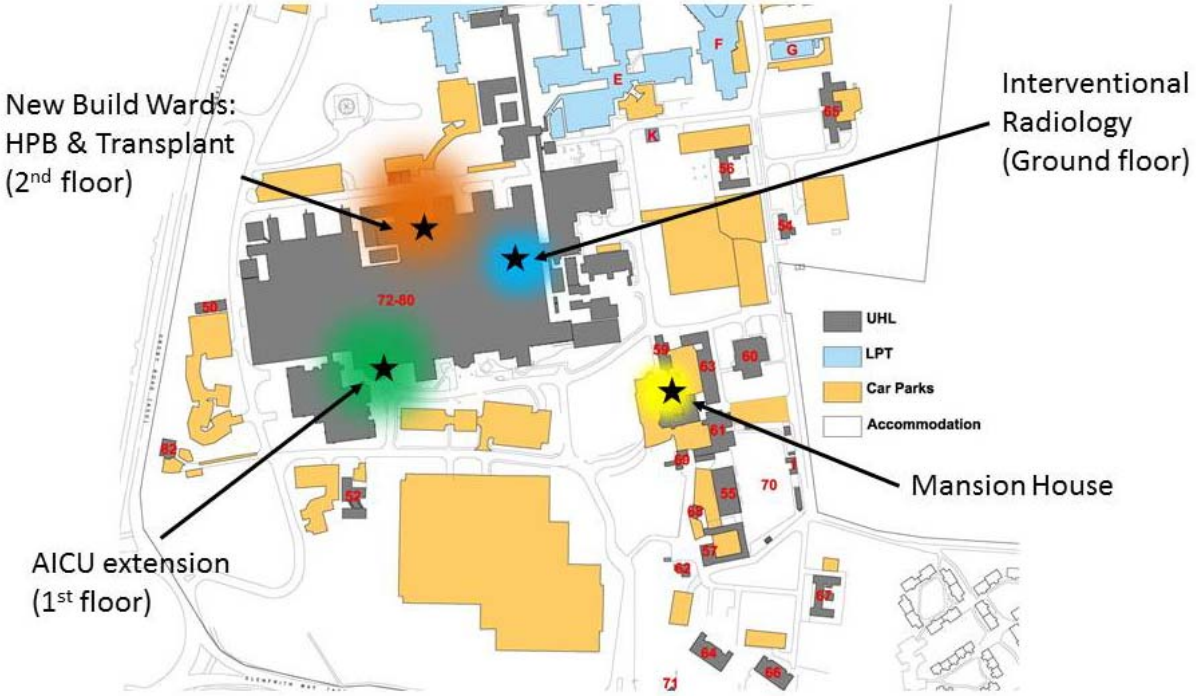
3.7 Summary of Preferred Option

The table below outlines the preferred option for each scheme, and the figure below shows where these options are located on the GH hospital site:

Table 75 - Preferred Option for Each Scheme

Scheme	Preferred Option	
ICU Extension	Option 4c	A new build expansion into Bay B, increasing the size of the existing unit.
Interventional Radiology	Option D1	Conversion of Medical Records and Office space, adjacent to existing Imaging space at GH
GH Beds	Option 1	New build development situated on a newly developed Third Floor at GH above wards 24,25 and 26
LRI Beds	Option 9	Ward 15, 16 and 21 refurbishment at LRI

Figure 15 - GH site Locations for Preferred Options



4. The Clinical Quality Case

4.1 Introduction

The Clinical Quality Case sets out how the proposed investment will improve the clinical quality of the Trust's services. It describes how the development will improve patient safety and experience by providing a clinically functional environment that facilitates efficient patient flows.

This case describes how the OBC is aligned to the Trust's clinical strategy to provide high quality services in a financially affordable and sustainable way. It also sets out how the investment will enable the Trust to support the delivery of a sustainable health economy in the future, strengthening the provision of emergency and elective care and providing care for the sickest patients.

The clinical leadership and engagement of clinicians has been fundamental through the life of the project to date and will continue through to the operational commissioning of the new facilities. They have supported the delivery of a design solution which satisfies national best practice guidance and standards, and improves the quality of the environment for patients, family and staff; whilst delivering a cost effective solution. The design solutions are detailed within this section.

4.2 Clinical strategy and Commissioning Intentions

As identified in the Strategic Case, the Trust's clinical reconfiguration strategy was first published in May 2014, for the period 2013/14 to 2018/19. Our Vision is stated as *"in the next 5 years, UHL will become a Trust that is internationally recognised for placing quality, safety and innovation at the centre of service provision. We will build on our strengths in specialised services, research and teaching and offer faster access to high quality care, develop our staff and improve patient experience, we call this…. "*

…Caring at its best

UHL's clinical reconfiguration strategy is set in the context of the overarching LLR 5-year strategy, which is reflected in the LLR Sustainability and Transformation Partnership (STP). A number of strategic objectives underpin the vision:

- High quality care for all – patient safety, improve outcomes and patient experience;
- The Trust's Quality Commitment – Save Lives, Reduce Harm, Patient -Centred Care;
- 7-day a week consultant delivered services;
- Optimising clinical service adjacencies to reduce avoidable deaths in our hospitals;
- Reducing the amount of time patients spend avoidably in our hospitals;

- Care closer to home through better and more integration with Community services;
- Providing high quality services in a financially affordable and sustainable way;
- The potential impact of alliances of care at local, regional and national levels.

The 2014 clinical reconfiguration strategy is in the process of being updated and will be available for submission with the FBC at the beginning of 2018.

4.3 Clinical Sustainability

This project represents the next phase of the Trust's longer term Reconfiguration Programme to move to a two site acute Trust, as reflected within the LLR STP. Robust activity modelling has taken place to develop the 'acute bed bridge' which is informing the development of the revised DCP and UHL Estates Strategy, which will be finalised for the FBC submission.

The UHL Estates Strategy will clearly and explicitly articulate the path, journey and timeline from where we are now to our final reconfigured state.

4.4 Design and Build

4.4.1 Introduction

The Interim ICU OBC comprises:

- GH: 11 bed extension to ICU – new build;
- GH: Additional 3 inpatient wards – new build;
- GH: Interventional Radiology suite – retained estate;
- LRI: Refurbishment to 3 existing inpatient wards.

The sections below outline both the individual elements of quality specific to each scheme and the more generic factors which are applicable collectively.

4.4.2 Overarching Principles informing the Design Brief

This section outlines the overarching principles which have influenced development of the design.

Clinical models of care and Operational Policies

Developing the clinical model of care is the first step in the identification of the design brief. The models of care which represent the four key components of the project (ICU expansion, Interventional Radiology (IR), wards at GH and wards at LRI) have been developed by the clinical stakeholders, and are referenced within this OBC.

Underpinning the clinical model of care are Clinical Operational Policies, included in Appendix 16, 17, 18, 19 and 20. These detail the future delivery of the service and how they need to function relative to the space they will occupy. The operational policies have been used within the high-level design process to:

- Assist all healthcare professionals involved in the provision of services and external contractors in the design of the facility to understand and interpret the future ways of working in the new environment;
- Identify and develop a comprehensive understanding of patient flow in and out of the department;
- Detail the flows of all stakeholders in to and out of the department;
- Describe the purpose and function of the accommodation required;
- Identify adjacencies and colocations required for the service delivery;
- Outline the requirements for business continuity;
- Outline any legislative and/or mandatory requirements for the delivery of the service e.g. relevant HBN, HTM recommendations;
- Contain the schedule of accommodation required within each respective project.

Front line clinical staff have been engaged in the design process since it was commenced. There has been a project team in place including senior clinical stakeholders: nursing, medical and allied health professionals from the individual services impacted by the project. The group has also had Infection Prevention (IP) and medical physics leads and where required other stake holders from Health and Safety (H&S), Facilities, and Information Management and Technology (IM&T) have joined the group. This team has developed the Models of care and Operational Policies, from which the design layout has been developed.

A draft Equality Impact Assessment (Due Regard) is attached at Appendix 21. This will be updated with the support of the Trust's Equality Manager to ensure we have captured where possible all measures to support those who may be impacted by the design.

Infection Control

Construction sites will be monitored throughout the programme from initial set-up to facility commissioning. Dust control, water testing and flushing regimes and Aspergillus risk assessments will all form part of contract agreements. Infection Prevention colleagues will be actively involved throughout the process.

Quality of care and experience

Quality of care and the patient experience is an important aspect in the delivery of an improved patient environment in all parts of this project. For example: The roof top position of the new ward development at GH provides patients, staff and visitors access to views over adjoining gardens. This has been taken into account in the 1:200 design process by positioning patient areas in places that offer the best vista.

Through imaginative use of lighting and colours, patient and staff experience will be enhanced. This will be taken into account when the interior designs are developed.

The Trust's dementia friendly policy will play a part in the detailed design process with particular reference to the use of colour, clear signage and the installation of the wandering patient alarm system, which is standard for GH.

Patient Led Assessment of the Care Environment (PLACE)

PLACE is a patient-led system for the assessment of the quality of the patient environment**.** The assessments are undertaken each year and the results published to help drive improvements in the hospital environment.

The schemes will improve PLACE scores in the following ways:

- Decoration will be bright and co-ordinated;
- Lighting will be used to enhance the environment;
- Furniture will conform to infection prevention requirements i.e. open at the back so as not to collect dirt and made from wipeable material;
- Areas will be ventilated to ensure odours do not linger;
- Natural light will be maximised; this includes the provision of roof lights in the ICU extension;
- The provision of adequate storage will promote a tidy environment;
- The appropriate use of handrails in toilets and on corridors;
- Colour contrasting and signage will support a dementia-friendly environment;
- Designs will address privacy and dignity issues;
- Equipment will support patient orientation and a calming environment through the use of colour, large day and date clocks in patient bays and the provision of silent close bins.

The table below shows UHL's PLACE results for the last two years, in comparison with the national average.

Table 76 - UHL PLACE Results (2016 and 2017) Compared to the National Average

	Cleanliness (%)		Privacy and Dignity (%)		Condition and appearance (%)		Dementia (%)		Disability(%)	
Year	**2016**	**2017**	**2016**	**2017**	**2016**	**2017**	**2016**	**2017**	**2016**	**2017**
GH	95.89	98.69	83.45	78.60	87.42	89.69	75.37	77.42	80.62	87.85
LRI	87.46	97.49	73.48	77.43	79.66	87.93	57.22	74.36	63.57	84.82
LGH	91.5	98.20	73.30	79.48	73.79	86.48	62.43	72.7	62.86	84.29
Trust Average	**90.37**	**97.93**	**75.84**	**78.14**	**80.23**	**88.03**	**62.72**	**74.72**	**67.51**	**85.42**
National Average	98.06	98.40	84.16	83.70	93.37	94.00	75.28	76.70	80.62	82.60

Quality of the environment

Design quality will be achieved through the delivery of the design principles by applying, where possible, guidance, compliance and quality assurance standards.

The Trust is committed to ensuring that the best possible designs are delivered, within the constraints of the footprint and cost envelope, and as such will be undertaking formal reviews of the design in all capital projects to give assurance that this is the case. The design assessment tools available for use are explained in the Commercial Case.

Safe Design

Safe design is imperative to the successful delivery and operation of all patient environments. This covers a number of important aspects including:

- Safety of the patient minimising risk in terms of infection control, movement around the clinical space, and environmental design to minimise slips, trips and falls;
- Personal safety to ensure risk of personal attack, loss of property etc. is minimised;
- Construction Design Management (CDM) which ensures minimised risk and optimised safety during the construction process;
- Safety in the working environment which optimises safety for staff in terms of ergonomics and health and safety.

All these safety aspects will be considered within the design process and undertaken via a joint approach between the Health and Safety Team, Infection Prevention, Security Staff, Clinical Staff and the Design Team. This will reflect patient, staff and goods flows within and between areas.

Access

Access is key in the development of the design. As part of the overall programme of capital schemes that form this OBC, there will be a site wide review of access. This is particularly important for GH, where the impact is most significant.

- **External** - This will include clear signage for all visitors to the site. This is not only important to patients, visitors and staff but also to everyone who will form part of the wider functioning of the estate. Particular attention will be paid to the needs of the 'Blue Light' services (including the Fire Service), with clear access arrangements in place which have been communicated appropriately;
- **Internal** - Throughout the detailed design process attention will be given to internal way-finding, clinical area access control and flows throughout the site. The flows of goods and facilities management will be separated from patient flows wherever possible.

Security

The Trust employs a Local Security Management Specialist (LSMS) who is being consulted during the design process. The LSMS role is to deliver a safe and secure NHS environment which allows the delivery of high quality patient and clinical care. The LSMS has access to specialists including input from the Police Force as required. The LSMS will sign off designs as part of our multi-disciplinary team at FBC. The work of the LSMS is overseen by NHS Protect (formerly known as the Counter Fraud and Security Management Service), whose remit is to help protect and secure the NHS, under Statutory Instrument 2002 No. 3009.

Fire Compliance

Fire code compliance is ensured through the development of the robust design. UHL has a directly employed Fire Advisor, who is working with the design teams to ensure fire code compliance. The Fire Advisor will sign off detailed designs at FBC stage.

IT systems

The unit will have all relevant Trust clinical IT systems fully integrated within each area. The Trust is incrementally moving towards a paperless IT system through the use of

NerveCentre. This project will be developed to ensure contiguity with the systems on each site.

Hub rooms will serve the IT requirement for the area and will meet the new enhanced specification in relation to functionality and resilience.

Business Continuity

Business continuity planning is a vital component of developing the construction programme. It falls into two distinct elements:

- Planning for known business continuity issues (e.g. noise, access). These issues will be addressed through a risk management process and mitigated through planning, communication and a costed risk allowance;
- Planning for unforeseen eventuality such as severing a main electricity supply cable. These issues form part of UHL's emergency business continuity plans. The risk will be managed through thorough site surveys, planning and ensuring business continuity with all clinical services at risk of disruption.

4.5 Scheme Design Development

4.5.1 ICU Extension - GH

Design Solution

The facilities comprise of a new build extension to the front of the current Glenfield hospital main building. This extends the current ICU (Bay B) from the current configuration of 4 beds (including 2 side rooms) to 15 beds which includes 4 isolation rooms (adding 11 physical bed spaces in total). This takes the Glenfield ICU to 33 beds of which 11 will be side/isolation rooms. The new extension will also have a dedicated nurse base, sluice, sister's office and accessible shower and WC. It will meet the HTN compliance standards for medical gases and the provision of Isolated Power Services (IPS) and Uninterrupted Power Supply (UPS) electrical supply.

Due to the specialist and complex nature of the ICU environment, the needs of the patient and staff are particularly paramount and this is reflected within the design, examples include:

- Design maximises natural light, from large external windows and use of skylights;
- Environment enhancing features have been incorporated including soothing light box images above patient beds;
- Four dedicated isolation rooms to meet IP requirements;
- The use of finishes within the unit will play an important role in ensuring a safe and clean environment, whilst creating a soothing natural ambience.

Privacy and Dignity

Privacy and dignity of patients is a cornerstone of UHL Trust values. The Trust's Privacy and Dignity (P&D) lead nurses are fully engaged in the design process. The P&D lead nurses will provide formal sign off of plans at FBC stage, which will take account of national guidance, including HBNs, PLACE criteria and DH consumerism.

Workflow and Logistics

The preferred location for the new build extension has optimum adjacencies for logistical flows. Adjacency with the current ICU on GH site offers easy access to amenities and service departments required for efficient operational running.

Access will be via existing lifts and stairwells providing excellent access to the department. The ICU has a dedicated entrance and visitor waiting areas.

Adaptability

The unit is a specialised facility and is designed to ensure seamless integration with the existing unit. The expansion is the first part of a programme to expand the unit in line with the Trust's long term Reconfiguration Programme. The design for this extension is aligned with the GH Development Control Plan (DCP) and future plans for the further development of ICU at GH.

Patient Space Standards

The primary focus of the ICU extension is the provision of 11 additional beds. Constraints of available space has resulted in derogation from HBN guidance, however this still constitutes an increase above the existing spacing within the current ICU. Existing bed spaces in the GH ICU are 19.35m^2, the new spaces are 20.0m^2 - 23.9m^2 as compared with the HBN requirement of 25.0m^2. All derogations have been approved by the clinical leads for project and the Trust Infection Prevention Nurse, and are outlined in the schedule of derogations at Appendix 22.

The Trust Infection Prevention Nurse has been fully engaged in the design process to date and has advised on, and approved, hand wash facilities throughout the unit with the addition of surgical scrub sinks for use in emergency situations.

The project delivers an additional 4 side rooms with gowning lobbies within the unit, taking the overall number of ICU side rooms to 11.

Impact of clinical adjacencies in the scheme design

The proposed location of the ICU benefits from all the adjacencies that the current unit has, as follows:

Table 77 - Clinical Adjacencies ICU Extension GH

Criteria	Clinical Adjacency
Essential	Operating Theatres
Important	Imaging
Desirable	Wards

The new 15 bed area (Bay B) is accessed through the current ICU and as such shares key facilities such as visitor waiting rooms, staff base, staff changing facilities and stores with the existing unit. The new facility will create improved patient kitchen facilities that will serve the extension and existing unit.

4.5.2 New Build Ward Development - GH

Design Solution

Three new build wards will be built on the roof of the Glenfield Hospital main building.

The ward development will accommodate clinical services relocating from the LGH to the GH, as follows:

- 1 x 28 bedded base ward for elective surgical Hepato-Pancreato-Biliary (HPB) patients;
- 1 x 24 bedded base ward for and a triage/admissions unit emergency HPB admissions;
- 1 x 12 bedded base ward for Renal Transplant (RT), designed to support the complexities of pre and post-operative transplant patients.

Both services have developed Clinical Operational Policies which have been signed off clinically.

These have formed the basis of the design layout. Design will reflect the needs of the patient. As the scheme progresses through the detailed design process patient representation will be a key part of the stakeholder team. Representatives from clinical support services (Occupational Therapy, Physiotherapy, Pharmacy, etc.) and support staff (hard and soft facilities management) who work with clinical areas will be engaged with throughout the design process.

Patients currently staying on our HPB and Transplant wards at the LGH have been engaged with regards to the proposed designs at 1:200 levels. Constructive comments have been made which will inform the next stage of the design process, particularly in relation to day / dining spaces within bays, accessing bathroom facilities from the bay and the most suitable configuration of the four beds within a bay.

Improving patient outcomes and staff wellbeing is a priority and wherever possible consideration will be given to making the very best of views to surrounding green areas and promoting a sense of space - with the use of light and colour within the constraints of both the footprint and cost envelope. As shown below, the roof top position of this development offers the patients, staff and visitors views over adjoining gardens. This has been taken into account in the 1:200 design process by positioning patient areas in places that offer the best vista. In addition the use of appropriate lighting strategies will be considered during the on-going process.

Privacy and Dignity

The design layout for all of the 3 ward areas takes into account Privacy and Dignity requirements. All bays and side rooms have en-suite facilities; each bay has an internal day space negating the need for a shared dayroom thus ensuring same sex compliance.

The Trust lead Nurse for P&D will help inform design by reviewing the layouts and identifying where improvements can be made throughout the design process.

Workflow and Logistics

The preferred location for the new build ward development has optimum adjacencies for logistical flows. The centrally located wards will offer easy access to all amenities and services required for efficient operational running. This was a key factor considered during

the clinical option appraisal process and vertical adjacencies to Theatres, ICU and Endoscopy services were considered to be very favourable to both the HPB and Renal Transplant services. This location is an improvement compared to their current position at the LGH.

An additional two new lifts and stair well will provide dedicated access to the new wards. Since the new lifts are adjacent to an existing lift core, they improve access in that area of the hospital site.

Adaptability

Design is based on the need to ensure flexibility to meet the future needs of the health service. Generic ward areas have been designed where possible whilst ensuring the clinical operational policies can be delivered, and there will be an element of flexibility to adapt the space as needed with the minimum of works. On a day to day basis ward accommodation will be able to flex to meet the sex mix of the patient cohort.

Patient Space Standards

HBN recommendations will be delivered as part of the final design solution wherever possible. Clear identification of associated derogations at this stage have been identified – See Appendix 23.

The Trust Infection Prevention Nurse has been fully engaged in the design process to date and has advised on best practice with regards to bed spacing. The current 1:200 has achieved compliance with bed spacing and the Trust will strive to continue to maintain this throughout detailed design. Inpatient bed spacing is 3.6m between beds, fully achieving HBN compliance.

Guidance relating to Infection Prevention has been reflected in the layouts with regard to the provision of en-suites, hand wash basins and floor finishes. These will be addressed in greater detail during the detailed design process.

Impact of clinical adjacencies in the scheme design

External adjacencies for the specialties relocating into the new build ward have been divided into 3 components: essential, important and desirable. The key external adjacencies for both departments are detailed in the table below.

Table 78 - Clinical Adjacencies New Build Wards GH

Criteria	Clinical Adjacency
Essential	There is a critical co-dependency between HPB and Interventional Radiology and Endoscopy Clinical support services Operating theatres and adult ICU
Important	Medical review occasionally needed
Desirable	Pathology useful for frozen histology intra-operatively, currently achieved with pathology of site.

Internal Adjacencies

The internal adjacencies within RT and HPB facilities are similar, reflecting a standard generic ward, and will be identified and achieved within the design of the department.

Both the internal and external adjacencies will be considered in greater detail in the detailed design process and operational commissioning processes within the FBC.

4.5.3 General Surgery Wards - LRI

Design Solution

The development comprises of the minor refurbishment of 3 existing clinical wards with an improvement in facilities provided. This includes improvements to en-suite facilities by adding these to existing six bed and four bed bays and the addition of improved day room space and ward kitchen facilities. New decoration, flooring and lighting throughout these areas will deliver a contemporary environment with improvements for both patients and staff.

The needs of patients, staff and visitors will be fundamental to the success of the design and future operational functionality. The key objective is to develop a functional clinical area for patients and ward attenders within the bounds of a minor refurbishment scheme.

Privacy and Dignity

Within the existing medical wards there are identified privacy and dignity issues, which are being addressed through the refurbishment. The primary improvement is the addition of en-suite bathrooms for six-bed or four-bed bays. The Trust Infection Prevention Nurse has been fully engaged in the design process to date and has advised on best practice with regards to optimising privacy and dignity in the retained estate wards, including consideration of bed spacing, hand wash provision and single rooms.

Workflow and Logistics

The preferred location for the wards is to occupy 3 existing clinical wards within the Balmoral building at the LRI. This has optimum adjacencies for logistical flows over and above other options. It will be adjacent to the current general surgery wards and with vertical adjacency to Theatres on site.

This option uses existing wards so access will be to use the existing lifts and stairwells. In order to further enhance the patient and visitor journey, the Trust will refurbish the lift lobby and corridors used to access these wards. This work will be funded from the Trust's Capital Resources Limits (CRL).

Adaptability

This project uses existing medical wards and all of the improvements being made will greatly improve the ward area. These wards will be easily used and adapted in the future for use by other specialties if required.

Patient Space Standards

The refurbishment of the existing estate, which dates from the 1970's, compromises the ability to be compliant with current HBN and HTN standards. However, the improvements

made will significantly improve the environment for both patients and staff and will address key privacy and dignity issues. Similar ward refurbishments carried out in recent years have realised significant benefits to improve staff and patient experience. Patients benefit from a cleaner, brighter environment. Task lighting over the bed allows patients to read and carry out hobbies. The use of silent close bins and sliding doors helps to create a quieter environment.

A ward refurbishment also greatly improves staff morale. This helps with recruitment and retention of staff and ultimately enhances patient experience.

Impact of Clinical Adjacencies in the Scheme Design

External adjacencies are adjacencies that the general surgery wards have to other departments/areas in the hospital; essentially what would the department be ideally located next to. The key external adjacencies for the wards are detailed in the following table.

Table 79 - Clinical Adjacencies New Build Wards LRI

Criteria	Clinical Adjacency
Essential	Adult anaesthesia Adult ITU Operating Theatres Clinical support services On site medical cover
Important	
Desirable	Cancer / oncology services Medicine – Emergency Department and gastroenterology Urology

The internal adjacencies within the ward are already created as part of the existing ward template, and this project will not be making any significant changes to that layout. The ward already houses both clinical and support space to include staff areas, kitchens, day space etc.

4.5.4 Interventional Radiology (IR) GH

Design Solution

A new IR department located adjacent to the existing X-ray department will support the HPB and transplant services moving from LGH to GH.

The new IR facilities comprise three new Interventional Radiology rooms and an Interventional Ultra-sound Scanner (USS) with associated in and outpatient facilities on the ground floor of the GH main building. This involves the alteration and refurbishment of an existing medical records and office area and encompasses all elements required to ensure it meets technical and clinical standards.

The needs of patients, staff and visitors will be fundamental to the success of the design and future operational functionality.

The design layout for IR has taken into account the necessity to address the requirements for delivering Privacy and Dignity requirements. Bed Bays and Outpatient changing rooms are single sex with dedicated en-suite facilities, which have been signed off by the Trust lead Nurse for P&D.

Workflow and Logistics

Patients will undergo consent, treatment and recovery in the facility and the design of the IR facility will enhance patient flows through the department, facilitating an efficient clinical model.

The preferred location for the IR optimises adjacencies for logistical flows over and above other the options that were considered. The IR Department will be central to the core of the GH therefore offering easy access to all amenities and service departments.

Adaptability

The work comprises three IR rooms – two of which will be furnished to meet the requirements of the services moving to the GH; the third will be utilised for other purposes until the completion of the whole reconfiguration programme when the third room will be required. On a day to day basis, accommodation will be able to flex to meet the sex mix of the patient cohort.

Patient Space Standards

HBN recommendations have been delivered as part of the final design solution, wherever possible. Clear identification of associated derogations at this stage are identified in the Derogation Schedule in Appendix 24.

The Trust Infection prevention Nurse has been fully engaged in the design process and has advised on best practice with regards to optimised bed spacing, which has been achieved.

Guidance relating to Infection Prevention has been reflected within the layout at a high level: en-suites, hand wash basins, floor finishes, etc. will be addressed in greater detail during the detailed design process at FBC stage.

Impact of Clinical Adjacencies in the Scheme Design

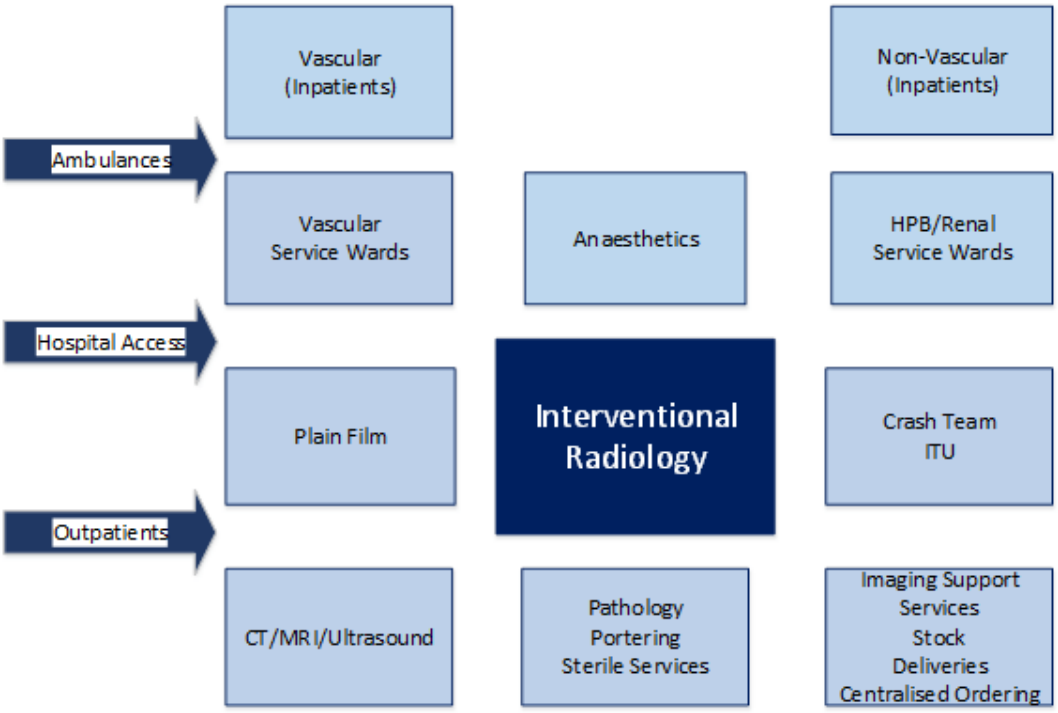
External adjacencies are divided into 3 components, essential, important and desirable. The key external adjacencies for IR are detailed in the following table:

Table 80 - Clinical Adjacencies IR GH

Criteria	Clinical Adjacency
Essential	High user and critical areas – ICU and assessment units.
Important	Renal and HPB wards.
Desirable	Outpatients

The internal adjacencies are influenced by the IR patient flow. The adjacencies are complex as more than one group of patients from differing sources will be accessing the department at one time - inpatients, outpatients and daycase patients, but have been achieved through the design.

Figure 16 - Internal Adjacencies IR GH



4.6 Leadership and Stakeholder Engagement

4.6.1 Clinical Leadership

Clinical leadership is key to the successful delivery of the project objectives:

- The Deputy Medical Director is one of the joint Senior Responsible Officers (SRO) for this project, and has been involved since the inception of the project. He has worked with clinical leads across services in the development and agreement of the models of care and clinical operational policies which support this project;
- Clinical leadership from within the Clinical Management Groups has been critical, and the following have been key to this in both the development of models of care, clinical operational polices and input to and sign off of design solutions that meet the brief and deliver both a clinical and cost effectiveness solution for the provision of patient care:
  - Intensive Care, Theatres, Anaesthetics, Pain and Sleep (ITAPS) – Clinical Director, Head of Service for ICU, Head of Service for Theatres;
  - Cancer, Haematology, Urology, Gastroenterology and General Surgery (CHUGGS) – Clinical Director;
  - Renal, Respiratory, Cardiac and Vascular (RRCV) – Clinical Director, Head of Service for Transplant and Head of Service for Nephrology;
  - Women's & Childrens (W&C) – Head of Service for Gynaecology.

4.6.2 Stakeholder Engagement

Stakeholder engagement is a vital part of the project in order to ensure that all needs are met through the delivery of the project. The following engagement has happened to date:

- **Healthwatch** - A local Healthwatch representative has been an important member of the ICU Project Board to date in their ability to gather and represent the views of the public in shaping the future delivery of services;
- **Patient Partners** - The Trust has a network of Patient Partners who work with the CMGs in the future development of services. The lead for the Patient Partners is a key member of the Project Board and is also one of the Patient Partners supporting the ITAPS CMG. Following a recent expansion of Patient Partners team within the Trust, we now have named individuals who will work support the project and the individual impacted services in ensuring patients views and suggestions are captured; and an appropriate and relevant communication plan is in place;
- **Commissioners** - There is representation from Leicester City CCG, as the lead commissioner for UHL, and NHSE Specialised Commissioners on the ICU Project Board for both the interim ICU case, but also the planning for the longer term solution for ICU at GH and LRI. Commissioners will evidence their support of this project by signing off the OBC and the FBC;
- **Overview and Scrutiny Committee (OSC)** - UHL Senior Managers presented the case for change for ICU, with regard to the on-going provision of Level 3 ICU at LGH, to the Overview and Scrutiny Committees in March 2015. The OSCs were asked to note the operational and safety issues facing ICU services across UHL. The outcome was that the OSCs supported the need to reconfigure the services urgently;
- **Internal clinical support services** - Engagement has been undertaken and is on-going across a range of clinical support services impacted by the transfer of services from LGH to GH and LRI to ensure that the implications and impact for them have been considered and taken into account. The services consulted include the below:
    - Pharmacy;
    - Speech and Language Therapy;
    - Dietetics;
    - Physiotherapy;
    - Occupational Therapy;
    - Pathology;
    - Blood Transfusion Services;
- **Estates and facilities management (FM)** - leads from the Estates and Facilities management team have been fully engaged in the project with regards to the impact on the GH and LRI of the moves from an estates, infrastructure and FM perspective. They have also taken account of the impact on the LGH of parts of the site that will be closed but will still need estates input – e.g. water testing for Legionella.

4.6.3 Consultation

This project was initiated in 2014 when the risk of clinical sustainability of a level 3 ICU service at the LGH became apparent. At that time, the OSC were consulted on, and supported, the clinical imperative to move the service. Mitigations were put in place to ensure

continuing safety of the service at the LGH, recognising the fact that there is a reliance on staff goodwill to continue to cover the site. This has been possible since the staff can see the intention to move the service through this project. (See Strategic case) .The availability of capital since this date has hindered progress, but the priority to move this service remains as important as ever. This intention has been published in our five year plan since 2014.

4.7 Workforce

Workforce planning is a critical component of any project plan. The approach to workforce development planning has been aligned to the "UHL Way" framework which is a Trust wide methodology that aims to support the way UHL manages change in a consistent and sustainable way. This incorporates approaches across three components, namely "Better Engagement", "Better Teams" and "Better Change". This ensures that we utilise Organisational Development (OD) input appropriately and has been recognised as a key element of the success criteria. Resources have been identified to support this change not only for the interim project but the longer term approach to delivering Intensive Care across UHL.

Responding to lessons learnt from our Emergency Floor and Vascular department moves, it has been acknowledged that the more staff are involved and engaged in the management of change and large scale projects, the higher the likelihood that these projects will be successful. This means assessing and responding appropriately in terms of communication and engagement with managers and staff; and investing the time, energy and resources to utilise proven techniques such as "cultural audits", offering leadership support and team development, but also enacting any bespoke interventions or events that may enhance staff and therefore patient experience. Ultimately this means creating an environment that takes staff through change in a supportive way, to highlight potential benefits and to influence hearts and minds. Research shows that the more engaged staff are the greater the chance of success and the ability to maximise the benefits of this project and generally developing a culture of 'being in it together', whilst minimising the potential negative impact from things like increased turnover, low morale caused by uncertainty.

4.7.1 Developing the workforce plans

In conjunction with finance and utilising intelligence in relation to activity, the workforce plans have been developed to reflect the required staffing to support a safe and sustainable workforce model. This has required an in-depth look at all staff groups and particularly medical staffing across a range of surgical specialties alongside the theatre and specialist ICU workforces. The complex interdependency of services that require Intensive Care at all levels has required plans at a medical rota level that have included Consultant, Middle and Junior grade doctors to ensure operational and educational quality and sustainability is maintained. This has included analysis of cover over 7 days, including nights and weekends, and applying safer staffing guidelines to the nursing, diagnostics and other support services.

In line with the drivers for the project, the provision and consolidation of staffing across two sites is a considerable qualitative and quantitative benefit from a staffing perspective, in particular from a Medical and Diagnostic standpoint, and ultimately supports workforce

efficiencies across all disciplines. Some of the greatest challenges are supporting the interim arrangements however, which means that some of the benefits will not be realised until the long term critical care model is fully implemented at the end of the whole reconfiguration programme. Developing the OBC has given the opportunity to develop innovation and support new ways of working and there has been a particular focus on training and education which in turn supports enhanced attraction and retention. New build and refurbished clinical environments will also aid recruitment and retention and will continue to be monitored by staff surveys and professional surveys internally and externally.

Some of the on-going workforce challenges will be addressed by this project. For example, the removal of training designation status at LGH is a key driver of this project and highlighted the need to address the training requirements and experience for junior doctors as well as a wide range of staff. Recruitment to the LGH after losing its training designation has become less attractive and a national shortage of experienced critical care nursing and medical staff compounds the difficulty in recruiting and retaining staff. Maintaining a sustainable workforce across three sites accentuates workforce supply issues and hinders the ability to develop safe and high quality workforce support, particularly at nights and at weekends and stretches an already acknowledged deficit in terms of registered staff for Medical, Nursing and Therapeutic staff. Any move to consolidating services has a positive impact in terms of sustainable future workforce supply and workable rosters.

As outlined earlier, the interim nature creates some temporary inefficiency but these challenges are more than offset by the desired end state. There is no doubt that a two site model is beneficial for a whole range of specialist workforce groups and this project is a significant stepping stone to achieve a healthy workforce balance operationally and educationally, reducing spend on premium staffing and an ultimately more efficient workforce model moving forwards.

The Workforce plan is included in Appendix 25. The revenue impact of the workforce plan is included in the Finance Case.

4.8 Learning and Continuous Improvement

The role of the leadership team is pivotal in engaging with, delivering and sustaining the required change and behaviours. It is essential to identify, consolidate and ‘live the way’ from an early point in the project lifecycle and then hold everyone to account right through and post project with clear guidance, training, direction and consequences to enable a consistent and transparent culture to operate.

To support this transition the Trust has the use of in-house development programmes, a clear capability framework and on-going OD support.

5 | The Commercial Case

5.1. Introduction

This section of the OBC outlines the proposed procurement method in relation to the preferred options outlined in the economic case, and the composition of procurement for each scheme.

This case outlines the provision of construction works to deliver the transfer of Level 3 ICU beds and dependant clinical services from the LGH to the LRI and GH sites.

5.2. Scope

The construction works associated with this OBC fall into 4 discreet projects, which have been outlined throughout this case:

- GH: 11 bed extension to ICU - new build;
- GH: 3 additional wards (two HPB and one Transplant ward) - new build;
- GH: Interventional Radiology (IR) - refurbishment of retained estate including enabling works to relocate current occupants;
- LRI: General Surgical beds - alteration and refurbishment of 3 existing wards.

The schemes at the GH include an element of infrastructure relating to electrical supply, hot water distribution and medical oxygen. The infrastructure at the LRI can support the moves of the wards into the existing estate with no adaptation needed.

5.3. Procurement Strategy and Implementation Timescales

5.3.1 Procurement Options

The procurement options considered by the Trust include:

- Traditional tender process through the ProContract portal;
- Single tender action to an individual contractor;
- Utilising national frameworks available to the NHS;
- Using the P22 NHS capital procurement framework;
- Use of PF2.

In deciding on the most appropriate procurement route, consideration has been made of the following factors**:**

- The size and complexity of the works;
- A cost effective procurement route;
- Procurement which complies with EU Law (OJEU);
- The timescales to which we are working to deliver the OBC, FBC and target date for delivery as programmed;

- The level of pre-works engagement with the contractor required under each procurement route;
- The current status of each element of the projects: some projects have already been designed and tendered whilst others are in the early stages of design.

The table below details the preferred procurement option and the rationale for the choice in relation to each scheme.

Table 81 - Preferred Procurement Options for Each Scheme

Scheme	Procurement Route	Reason for Selection
GH: 11 bed extension to ICU	Traditional tender	This scheme was tendered in 2015 therefore requires minimal refreshing.
GH: New build Modular Wards	Selection of a contractor from the 'Shared Business Service' framework.	Design and build by a specialist bespoke modular contractor will deliver Value For Money (VFM) and can be achieved to our timescales.
GH: Interventional Radiology (IR)	Traditional tender	Worked up to Guaranteed Maximum Price (GMP) under a previous framework with Interserve Construction*. Tender will now achieve best VFM.
LRI: General Surgery Ward	Traditional tender to local Small and Medium Enterprises	This method of procurement will enable us to build on lessons learned during 5 most recent ward refurbishments and deliver VFM through repeatable procurement.

* Previous major capital projects delivered by the Trust were procured utilising UHL's bespoke lot2 framework, which was awarded to Interserve Construction following an OJEU tender. This framework has now expired.

P22 Procurement

The Trust will commence appointment of a P22 Principle Supply Chain Partner (PSCP) in December 2017, with a view to appointing in early 2018. Given the various stages the Trust is at with the current construction projects, it is considered that alternatives to P22 will serve us best at this juncture.

Use of Framework Agreements

In order to procure the installation of high quality modular wards at GH, the Trust will utilise a national framework agreement. In order to develop the detailed designs, we have appointed MTX Contracts Limited from the Shared Business Services framework ref SBS/16/JS/PZS/9094. Details of the framework and evidence of our eligibility to use it are provided in Appendix 26.

UHL is aware of the recent launch of the London Housing Communities (LHC) new modular buildings framework and is currently exploring which of the two frameworks offers the Trust best VFM.

5.3.2 Equipment Procurement Strategy

The Trust is adopting an approach whereby relevant equipment will be transferred between sites with the service moves, in order to minimise additional costs associated with the purchase of equipment.

Within this case there are specific elements which require separate consideration:

- **ICU Extension GH** – The equipment for the Level 3 ICU unit is complex and expensive. The equipment strategy reflects this, and as part of this project a number of Level 3 ICU beds at the LGH will be closed and the associated equipment will be transferred with these beds to the GH. New equipment will be procured for the remaining beds, and documented within a full equipment schedule in the FBC. The new ICU beds at the GH will benefit from new medical pendants and full patient monitoring;
- **New Build Wards GH** – a detailed equipment schedule will be developed to support the FBC. From early discussions with key stakeholders it is apparent that a mixed economy of transfer and new equipment is required due to the change in the way these wards will function. This schedule with be finalised and costed in the FBC;
- **IR GH**- The IR room equipment replacement schedule has been reviewed with the Managed Equipment Service (MES) supplier to align with the development of the new IR rooms at GH. The proposed solution is to bring forward the replacement of one LGH room to the GH and to defer the replacement of another at the LGH. An additional ultrasound will be added to the contract, for provision at the GH. The finance case incorporates the financial consequences of the revised phasing;
- **General Surgery Wards LRI** – As the 3 wards at the LRI will be transferred (2 wards from LGH and 1 ward relocating within the LRI), the majority of equipment will be transferred. A few items of equipment may be required to ensure the area is clinically functional before occupation. This will be detailed and costed in the FBC.

An allowance for all the equipment highlighted above is made for in this OBC as part of the economic case as follows:

Table 82 - Percentage Allowance of Departmental Cost for Equipment

Scheme	Departmental Cost Allowance for Equipment (%)
GH: ICU Extension	21.7
GH: New wards	12.6
GH: IR	15.0
LRI: Wards	12.6

5.3.3 Milestones for Implementation

It is anticipated that the milestones for implementation will be agreed for each scheme with the service provider.

These will be as follows:

Table 83 – Milestones for Implementation

Milestone Activity	ICU Extension GH	New Build Wards GH	IR GH	Ward Refurb LRI
Planning Approval	Submitted and received	Feb 2018	n/a	n/a
Tender procurement construction works	Feb 2018	n/a	Feb 2018	Feb 2018
GMP received from Construction Partner	n/a	Feb 2018	n/a	n/a
NHSI FBC Approval	Apr 2018	Apr 2018	Apr 2018	Apr 2018
Award Enabling Works contract	n/a	n/a	Apr 2018	n/a
Commencement of Enabling Works	n/a	n/a	May 2018	n/a
Completion of Enabling Works	n/a	n/a	Jul 2018	n/a
Operational Commissioning and go live of Enabling Works	n/a	n/a	Aug 2018	n/a
Award Construction Contracts	Apr 2018	Apr 2018	Jul 2018	Apr 2018
Commencement of construction	May 2018	May 2018	Sept 2018	May 2018
Construction complete	Feb 2019	Jul 2019	Apr 2019	Oct 2018
Operational Commissioning and go live	Mar 2019	Aug 2019	May 2019	Nov 2018

5.4. Subject Matter for Procurement

This OBC details the case for the transfer of the Level 3 Intensive Care beds (ICU) and dependant services from the Leicester General Hospital to the Glenfield Hospital. The Estates solution will provide the assurance that the key milestones in the planning of the capital development have been achieved whilst utilising the appropriate guidance. This is inclusive of engagement and liaison with the respective stakeholders. The estates components of the case will ultimately focus on the capital investment and works required to enable the movement of Level 3 ICU beds and dependent services from the LGH to the GH and the LRI.

5.4.1 ICU Extension - Glenfield Hospital

The ICU detailed design was started in 2015; it was developed as part of an internally Trust approved FBC and taken to detailed design and tender stage. At that point the project was put on hold due to lack of capital funding. Since that time the architect and structural engineer have ceased trading. The Trust has now engaged a new design team, which has undertaken a full review of the original designs; which combined with some changes in guidance, had led to the detailed designs being redeveloped. These will be finalised for the FBC.

The key objective of the design is to develop an ICU extension adjacent to the existing ICU department; this will extend the current ICU department by an additional 11 beds. The requirements are as follows:

- Enhancement of the privacy and dignity of patients where applicable in this type of unit, recognising the need for staff supervision and line of sight;
- Facilities for locating and summoning other staff quickly in an emergency are to be located in key areas, taking into account departmental guidance and requirements;
- Standardisation of the bed areas within the department (as far as possible, without compromising on the individual bed functionality). Bed area standardisation can ensure familiarity of the layout and location of key items of equipment thereby reducing the potential for clinical incidents as a consequence of staff not being aware of the location of equipment;
- There must be adequate design and operational measures to prevent and contain the spread of infection. Clinical hand wash sinks and alcohol hand sanitizer points placed as per Infection Prevention Control and relevant DH standards and guidance;
- The design will provide the benefit of the addition of three isolation rooms;
- The area will aid the movement of patients to and from the bed;
- The area will benefit from as much natural light as possible, with the addition of sky light into the area to improve the quality of the environment;
- An environment that enhances communication across the multi-disciplinary team;
- The area will benefit from an accessible Shower and WC.

As outlined in the economic case, the preferred location for the ICU department is a new build area that allows the direct expansion of the current ICU Bay B and increases the size of existing unit. The project design team referenced Health Building Note (HBN) 04-02 'Critical Care Units' (Department of Health, 2013), applying the recommended room sizes. This resulted in a proposed Net Internal Floor Area of 1066.35 m^2. The DH standards and guidance in this HBN have been utilised and applied where possible, along with others that are deemed applicable, including Health Technical Memoranda (HTMs) and Activity DataBase (ADB) room data sheets where available. Due to some restrictions on space, there may be some constraints in terms of achieving full compliance with the HBN. Where compliance is not possible, derogations will be detailed by the contractor and approved by the Trust.

5.4.2 New Build Wards – Glenfield Hospital

The design solution for the preferred option for the HPB and Renal Transplant services involves three new build wards to be developed on the roof of the Glenfield Hospital. This location within the Glenfield site offers optimum clinical and service adjacencies whilst ensuring that it doesn't impact on the development area identified in the future years of the Trusts wider reconfiguration programme.

Thorough feasibility studies have been undertaken by structural engineers to determine the ease of deliverability to construct in this area and this has been confirmed as achievable. Whilst the wards will be a new build construction, the design footprint is constrained by the existing building below. HBN guidance has changed in the intervening years and there will be

a challenge to accommodate the HBN recommendations within the space available. The Project Team will work closely with trust clinical colleagues and the NHSI Quality Team throughout the process to ensure the final design delivers safe and effective patient care.

The building will be constructed using modern methods of construction offering an innovative alternative to a traditional construction solution. The system is an off-site produced, steel framed solution that comprises a concrete floor and a high standard of internal finishes, representative of a traditional construction method. It offers a 60 year life span, comparable to traditional build. This construction method provides the ability to manipulate the internal layout to ensure it provides full clinical functionality in line with the operational policies.

This method has been widely researched by the technical estates department, executive members of the Trust and patient partner representatives. Senior members of the Capital Projects Team have visited Northwick Park hospital where solutions of this nature are in operation. They are particularly impressed with the quality of the building and the positive feedback received from both clinical and estates staff.

The new build wards comprise:

- Renal Transplant: A 12 bedded Renal Transplant Unit; fully HTM compliant to provide dialysis services in order to deliver safe and effective care of patients pre and post Renal Transplant surgery. The original scope in 2015 identified the need for 10 Transplant Beds, however this has increased to align with the bed bridge, articulated in the LLR STP. The ward will include 4 single rooms within the bed complement.
- HPB: Two inpatient wards comprising:
  - 1 x 28 bed ward to provide care for pre and post elective surgical patients;
  - 1 x 24 bed ward with an adjacent admissions/triage area to accommodate emergency admissions and ward attenders.

The Glenfield site predominantly accommodates Cardio-Respiratory services. The current admissions area (the Clinical Decisions Unit) does not have the capacity or appropriate staff skill base to assess and triage HPB specialty patients. For this reason, in the interim term, the service will accommodate this function within an emergency admissions area at the end of the inpatient ward until the Reconfiguration Programme has been fully delivered. The intention in the longer term is to develop a discreet Surgical Assessment Unit facility at the GH.

5.4.3 Interventional Radiology (IR) – Glenfield Hospital

The scope and designs for the IR project were initially developed in 2015 with a GMP produced in 2016. The scope and designs have been reviewed and evaluated by the clinical and estates team to confirm functionality. A small number of minor changes to the internal layout have been made, which are reflected in the layout drawing.

To support the inpatient and outpatient services moving from LGH, the following imaging services are required on the GH site:

- 3 Interventional Radiology rooms (one of the IR rooms will initially be mothballed until the remainder of the service can move across to the GH at the end of the reconfiguration programme);
- 1 Interventional Ultrasound scanning room.

No additional imaging capacity is being delivered through the project; the capacity is being relocated as detailed below:

- LGH room 12 moves to GH and is replaced with new Imaging equipment as part of the MES programme/contract;
- LGH room 10 moves to GH as part of the existing MES contract;
- GH room 3 is relocated on site into the new IR area, as part of the existing MES contract;
- GH room 3 becomes an Interventional USS room.

Enabling

The design solution detailed in the preferred option is the refurbishment of an area adjacent to the existing imaging department and a medical records space. A key element of the project will be the timely relocation of the services currently occupying this space as follows:

- **Medical Records**:

  This area is the main medical records library on the GH site. The department has capacity to store 80,000 sets of patient notes, which will need to be relocated. Following a review of the Glenfield site to determine what existing non-clinical space on site could be converted to provide space, a currently empty building (known as "Snoezelen") was identified as being suitable. This is accessible on the site and has the capacity to accommodate the medical records. A specialist racking company has reviewed the building and provided costs to provide storage to relocate the medical records and build the racking required to house the notes. The building does require some refurbishment to ensure the area is fit for purpose to house medical records;

- **Office Accommodation**

  A number of offices and on call rooms are displaced by the proposed IR suite, and therefore require relocation. Following a review of the Glenfield site to determine what existing accommodation could be converted to provide space; Mansion House (a vacant building) was identified as being suitable. The building requires a level of refurbishment to ensure the area is fit for purpose as offices.

5.4.4 General Surgery Wards – LRI

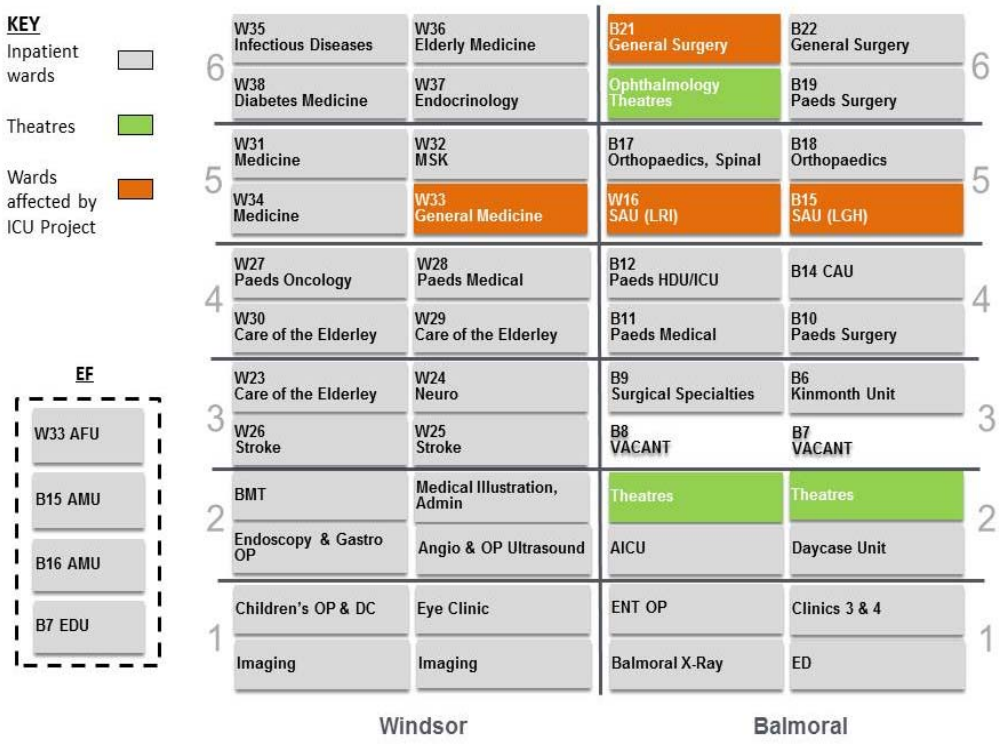
In 2015, this project was only considered at a very high level, with a number of potential wards being identified as potential locations but with no detailed Schedules of Accommodation (SOA) developed. The preferred option (as detailed in the Economic Case) is to relocate two general surgery wards from the LGH in the following sequence:

- LRI Surgical Assessment Unit Ward 8 (SAU) moves to LRI Ward 15;
- LGH Surgical Assessment Unit (SAU) moves to LRI Ward 16, this allows the formation of an integrated SAU unit with ward 15;

- LRI Ward 21(Medicine) moves to LRI Ward 33 to allow LGH Surgical Ward to move to LRI Ward 21;
- LRI elective surgery wards are co-located on wards 21 and 22.

The LRI wards 15, 16 and 21 will be subject to refurbishment and minor alteration. This is detailed in the following diagram:

Figure 17 - Balmoral and Windsor Stacking Diagram, LRI



These wards were built in 1970's, each with an internal floor area circa 685 m^2 each. The scope of this project will not fundamentally alter the layout and infrastructure of these wards, but will deliver a refurbishment which will allow a significant improvement in the ward environment, which in turn will enhance the patients and staff experience and allow upgrade to the lighting, nurse call system, sanitary ware and general décor.

The limited scope of this project means new drawings have not been produced for OBC, but a minor refurbishment cost allowance has been included in the finance section.

5.5. 1:200 Drawings

1:200 drawings for preferred options for each scheme are included in Appendix 27, 28, 29 and 30.

5.6. Schedule of Accommodation (SoA)

To enable designs and 1:200 plans to be produced, a Schedule of Accommodation (SoA) for each separate scheme was developed, through engagement with the CMG to confirm the

required functional content. An iterative approach was adopted with the clinical and management teams to deliver a finalised schedule. The LRI wards refurbishment has a more limited scope with a like-for- like transfer of wards and as such a detailed schedule of accommodation has not been produced. The clinical requirements and functional content for this area, with particular reference to the triage facility, are being developed by the design team with stakeholders.

Schedules of accommodation for each scheme are included in Appendix 31, 32, 33, 34 and 35.

5.7. Design Quality Review

When the IR rooms and the ICU extension were designed to FBC level in 2015, the formal process of DQI was not undertaken, and there is no perceived added advantage at this stage of completing this assessment for these elements of the project. This view has been validated by the NHSE Projects Assurance Unit (PAU) in pre-business case discussions. However, the principles of DQI were applied during the design process. There is a wealth of evidence that demonstrates the positive impact that the environment can have on patient's recovery. The Trust remains confident the design of these facilities will offer a high quality environment which will have a positive impact on clinical outcomes e.g. well-being, recovery rates and reduced infection rates, improved patient flow and enhanced privacy and dignity.

While the principles of the DQI will be strived for, it will be very difficult to address the requirements due to the minor refurbishment scope of the ward refurbishment at the LRI. None the less, patient flow will be enhanced, as will privacy and dignity and the patient environment.

The new build wards at the GH will have a formal design review will be undertaken before the FBC s submitted.

5.8. Mandatory Government Construction Strategy

This project has been developed in line with the Government construction strategy. This includes:

- Early engagement with the supply chain to develop designs which are buildable, cost effective and which account for site constraints;
- Use of BIM level 2;
- Soft landings.

5.9. Government Consumerism Requirements

Our design solutions will, wherever possible, comply with consumerism requirements. These include:

- Achieving high levels of privacy and dignity;

- Creating gender specific day spaces;
- Good use of natural light;
- Use of high quality materials to reduce life cycle costs;
- Provision of single sex wash facilities.

The table below outlines at a high level the delivery of each scheme against the criteria; with further detail being provided in the Clinical Quality Case. It should be noted that there is greater opportunity for the delivery of these criteria in new build schemes as opposed to retained estate, due to spatial restraints.

Table 84 - Delivery of Consumerism

Consumerism Requirement	ICU GH	GH Ward	IR GH	LRI Ward
Acceptable levels of privacy and dignity at all times				
Gender specific day rooms	**n/a**		**n/a**	**n/a**
High specification fabric and finishes				
Natural light and ventilation				
Zero discomfort from solar gain				
Dedicated storage space to support high standards of housekeeping and user safety				
Dedicated storage for waste awaiting periodic removal				
Inpatient configurations of >50% single en-suite and >5 bed bays with separate en-suite WC and shower facilities with 3.6 meter bed centres			**n/a**	
Single sex washing and toilet facilities				
Safe and accessible storage of belongings including cash				
Immediate patient access to call points for summoning assistance				
Patient control of personal ambient environmental temperatures				
Lighting at bed head conducive to reading and close work			**n/a**	
Patient bedside communication and entertainment systems				
Elimination of mixed sex accommodation				

5.10. Compliance with HBN/HTM

Specific details for each scheme in relation to compliance and derogations can be found in the Clinical Quality Case.

Whenever possible, the schemes will comply with Building Regulations, European Standards, British Standards and Codes of Practice, guidance on the design and construction of primary care and general medical facilities. Much of this is contained in a series of DH publications and guidance documents primarily written for the NHS, including but not limited to the following:

- Health Building Notes (HBNs);
- Health Technical Memoranda (HTMs).

The NHS Constitution commits the NHS to provide services in a clean and safe environment that is fit for purpose and based on national best practice. The HBN and HTMs provide national best practice for the design and layout of facilities. For this project, key titles among many that will be relevant include:

- HBN 00-01 General Design Guidance for Health Care Buildings;
- HBN 00-09 Infection Control;
- HBN 04-02 Critical Care Units;
- HBN 06 Diagnostic Imaging;
- HTM 03-01 Ventilation, 2006.

The design development of this scheme has endeavoured to be delivered within these guidance documents however as the scheme is developed within a limited footprint and also involves some refurbishment, some recommendations made by the DH guidance will not be achievable – these will be noted as derogations. The Trust will systematically review and, where required, approve each derogation before it is implemented.

The derogation schedules are included in Appendix 22, 23 and 24.

Owing to the fact that the LRI Wards project is entirely refurbishment of wards built in the 1970's, the probability is that the vast majority of areas will not be compliant with modern HBN/HTMs. The Trust will, wherever cost and feasibility allows, greatly improve the environment from its current condition. For this reason there will be no formal derogation schedule for this project.

When designing the IR, the DH Health Building Note (HBN 6) for Diagnostic Imaging has been referred to and the respective room sizes applied, resulting in a Net Internal Floor Area of 899.50m^2. The HBN will be utilised and applied where possible (while recognising that it has not been updated recently). The preferred solution for the IR department is refurbishment of an area of the existing estate; adjacent to the main Imaging department therefore there are some constraints in terms of achieving full compliance with the HBN. The derogations are detailed in Appendix 22, 23 and 24, which have been signed off by the clinical team.

5.11. BREEAM (Building Research Establishment Environmental Assessment Method)

The four main construction elements of this OBC are at different stages as the ICU extension and the IR rooms were designed and tendered/reached GMP in 2015. Our focus will be to achieve BREEAM 2014 Very Good or Excellent whilst recognising that parts of the scheme are fully embedded within retained estate. The Trust has appointed a BREEAM assessor who is carrying out pre-assessments on all four projects to determine the available target level of classification. This will be confirmed in the FBC.

Draft pre-assessment reports have been completed, with the outcomes detailed below. These pre-assessments will be subject to a 'confirm and challenge' exercise with the design / construction team in order to produce the interim design assessment. Evidence will then be collated for review by the BREEAM assessor, prior to submission to the BRE for audit, in order to obtain interim design certification.

Table 85 - BREEAM Draft Pre-Assessments

Scheme	Predicted Score	BREEAM Rating
ICU extension	61.20%	Very Good
Interventional radiology	57.05%	Very Good
Additional wards GH	65.5%	Very Good

The BREEAM pre-assessment report can be found at Appendix 36.

5.12. DH Energy and Sustainability

The Trust will endeavour to implement environmentally sustainable facilities across all of its activities and processes with a strong focus on clinically led service redesign. The Trust has a Sustainability Management Plan (see Appendix 37), the key elements of which are described below.

5.12.1 Innovation

UHL is planning an ambitious reconfiguration programme over the next 5 years, with movement of services, refurbishment of existing buildings, the provision of new buildings, and the replacement of medical equipment. Arising from this is a huge opportunity for our commitments on sustainability and our carbon emission reductions to become a reality. Given that all buildings and equipment have a "carbon footprint", the Trust will utilise the various standards and guidance, to set minimum standards for building and equipment performance, looking to demonstrate improvements on these with robust life cycle analysis related to financial investment and carbon emissions.

The Trust's Estates and Capital Project team has invested in a number of energy saving measures in recent years, including LED lighting in circulation areas and variable speed controllers on heating, ventilation and air conditioning (HVAC) motors. Such initiatives have resulted in a gradual decrease in energy consumption.

The teams will continue to take the following into consideration:

- Ensure that built environments are designed to encourage sustainability, including meeting Trust and national CO2 reduction targets, and to promote wellness and resilience to Climate Change in all aspects of their operation;
- Clear sustainability targets will be set for new building projects and these will be monitored following commissioning;
- Ensure that all staff, including temporary and agency workers, are aware of the Trust's commitment to sustainability and how this is influenced by the built environment;
- Estates and Procurement teams will work together to ensure that all design and building contractors are aware of the Trust's sustainability objectives and targets. Contractors will be required to demonstrate a commitment to sustainability within their own operations (i.e. by holding ISO14001 certification) and will be challenged to identify innovative and cost-effective solutions to enable the Trust to go beyond its Sustainable Development Management Plan (SDMP) targets;
- All decisions about design and build of Trust facilities must be explicit about how they encourage a broader approach to sustainability including transport, delivery of services and community engagement;
- All major building projects will be subject to a BREEAM assessment to ensure that sustainability considerations are incorporated into planning and design decisions from the outset. As a minimum, major projects will be required to achieve a BREEAM rating of "very good";
- Climate change resilience and adaptation will be core factors in the planning and design of Trust estate;
- Estates will seek to engage both staff and external stakeholders in all major future planning activities.

5.12.2 Improving Building Services and Fabric

The proven benefits of improving the technical efficiency of heating plant, lighting fittings and ventilation plant will be exploited, along with improvements on controls, and metering to ensure efficiency gains are sustained. The opportunity to refurbish the building fabric and to procure new building stock will enable stringent air tightness, and insulation values to be embedded in the specifications, along with innovations of layouts and natural light and ventilation flows.

5.12.3 Life Cycle Costing: Procurement of Capital and Revenue Projects

This will be introduced at all levels of procurement, not only on major projects. Over the term of this plan, we intend that this will have become a crucial part of assessing the efficiency of equipment and buildings and the related cost/carbon impact. While the concept of life cycle costing is generally accepted as a common-sense approach to adopt, these measures will be integrated into the purchasing mechanisms for both capital and revenue items.

5.13. Resilience to Hazards

In planning the design for the construction projects associated with this OBC, consideration has been given of the advice in HBN 00-07 (Planning for a Resilient Healthcare Estate).

This will include ensuring resilience to:

- Electrical supplies - using standby generation, Combined Heat and Power (CHP) and uninterruptable power supply facilities where appropriate;
- Water supplies - using dual storage capacity;
- Medical Oxygen - creating a secondary Vacuum Insulated Evaporator (VIE) linked to a ring main distribution;
- Installation of an additional duel fuel boiler linked to the existing low temperature hot water distribution system.

5.14. Travel Plan

These developments take account of requirements under the Trust approved 'Green Travel Plan' – see Appendix 38. The Trust is confident that the GH can accommodate the increased traffic and parking requirements associated with the transfer of further services to this site.

5.15. Planning Permission

5.15.1 ICU GH

The Trust received planning permission for the extension to the ICU on 3rd November 2015, against Application reference 20151522. This is attached as Appendix 39.

The following conditions were imposed, and the Trust has confidence these will be met:

- The development shall be begun within three years from the date of this permission (To comply with Section 91 of the Town and Country Planning Act 1990.);
- The external elevations shall be constructed in facing bricks to match those existing. (In the interests of visual amenity, and in accordance with Core Strategy policy CS3.);
- This consent shall relate to the plans received by the City Council as local planning authority with the planning application and amended plans received on 25th August 2015 unless otherwise submitted to and approved by the City Council as local planning authority. (For the avoidance of doubt).

5.15.2 New Wards GH

The Trust will be required to submit a planning application for the construction of a new ward block on the Glenfield site. The pre-planning consultation application for this was submitted in October 2017. Preliminary discussions with the planning department raised no concerns regarding achieving planning. It is likely that the application will be dealt with under delegated powers. Full planning consent will be received before submitting the FBC.

All other aspects of the proposed schemes will not require planning or change of use consent.

5.16. Potential for Risk Transfer

The general principle is that risks should be managed by the most appropriate partner in the construction process ensuring that the responsibility is placed on the designated partner with the ability to control and insure against that risk.

An assessment of how the associated risks might be apportioned between the Trust, the professional design team and the construction company has been carried out for each aspect of the project.

Due to our mixed procurement strategy the degree of risk transfer will vary. For example, the new build wards will be procured through a design and build contract which places much more of the risk with the contractor. Where traditional tender is used the Trust will employ the design team and thus bear a greater proportion of the responsibility if problems occur. We are confident that risk is appropriately placed to achieve best value for money and appropriate management of risk.

5.17. Proposed Charging Mechanisms

The Trust will make payments in accordance with the valuation periods prescribed in the contracts. Prior to payment our external cost advisor will certify each invoice having ensured that it is valid and reflects the relevant valuation.

5.18. Proposed Contract Lengths

The length of each construction contract will reflect the construction programme and the prescribed defects period as shown in the following table:

Table 86 - Construction Programme

Milestone Activity	ICU Extension GH	New Build Wards GH	IR GH	Ward Refurb LRI
Award Enabling Works contract	n/a	n/a	Apr 2018	n/a
Commencement of Enabling Works	n/a	n/a	May 2018	n/a
Completion of Enabling Works	n/a	n/a	Jul 2018	n/a
Award Construction Contracts	Apr 2018	Apr 2018	Jul 2018	Apr 2018
Commencement of construction	May 2018	May 2018	Sept 2018	May 2018
Construction complete	Feb 2019	Jul 2019	Apr 2019	Oct 2018

5.19. Proposed Key Contractual Clauses

Standard construction contracts will be used. Any Z Clauses in NEC contracts will be created so as not to unnecessarily increase cost or dilute value for money (VFM).

5.20. Land Transactions

This ICU OBC is the first step in delivering the LLR STP Estates Strategy. The reconfiguration of clinical services described in our STP will release the majority of land at the LGH for housing, helping to align with recommendations arising from the Naylor Report. In addition the Trust has identified surplus land at the GH which can be disposed of during 2018. The UHL property team are working with Simon Corben, Director of NHS Estates Efficiency and Productivity Division, to achieve a best value disposal of this land.

The table below identifies the land and outlines its value and the estimated number of housing units which could be built on the land.

Table 87 - Land Sale Estimated Values

Location	Area (acres)	Estimated value (£)	Estimated housing units
GH (the paddock)	12	6m	168
GH (residences)	8	2.2m	52
LGH	44	19.8m	608

This is detailed in greater detail in Appendix 40.

6. The Financial Case

6.1 Introduction

The Financial Case examines the affordability of the preferred options and sets out the financial implications for the Trust in terms of capital expenditure and cash flow, the income and expenditure account and borrowing. The purpose of this section is to set out the forecast financial implications of the preferred options as set out in the Economic Case and the proposed procurement method as described in the Commercial Case.

The Trust was formed in April 2000 and achieved its financial targets for the first 12 years. Audited financial results for 2011/12 and 2012/13, show that the Trust made a surplus of £88k and £91k respectively. 2013/14 however was a challenging year both operationally and financially and the Trust reported a deficit for the first time since the organisation was formed. In 2014/15 there was a £40.6 million deficit against a plan of £40.7 million, and in 2015/16 the Trust delivered its planned deficit of £34.1 million. In 2016/17 the Trust delivered a £27.2m deficit for the year against the planned deficit of £8.3m. This was £18.9m adverse variance to plan, including £12m relating to Sustainability and Transformation Fund (STF) funding.

The Trust has a planned underlying deficit position of £26.7m for 2017/18.

The financial position of this OBC shows there will be an additional cost of £3.2 million per annum recurrently until the Trust reconfigures on to two sites, when the additional cost reduces to £1.3 million. The recurrent additional cost will be offset by savings from reconfiguration when the LGH closes and its associated infrastructure costs removed.

6.2 Capital Costs

The capital costs of the preferred option total £30.80 million. Table 88 below summarises the total costs:

Table 88 - Summary of Capital Costs

Element	Total £
Works cost	21,323,399
Fees	2,823,120
Equipment Cost	2,781,629
Planning Contingency	1,726,496
Optimism Bias	2,143,939
Total for Approval Purposes	**30,798,583**

6.2.1 Financing

The Trust has assumed the scheme will be funded through Interim Capital Support Loan (ICSL) in line with DH guidance. The Trust requires funding in 2017/18 to 2019/20.

6.3 Income and Expenditure

6.3.1 Summary

The financial position of this OBC shows an additional cost of £3.15 million per annum recurrently until the Trust reconfigures on to two sites, when the additional cost reduces to £1.2 million. The recurrent additional cost will be offset by savings from reconfiguration.

The projected impact on the Trust's income and expenditure (I&E) position is summarised in Table 89 below:

Table 89 - Financial Position of this Outline Business Case

Impact on Income and Expenditure	2017/18 £'000	2018/19 £'000	2019/20 £'000	2020/21 £'000	2021/22 £'000	2022/23 £'000	2023/24 £'000
ICU	0	0	678	924	924	924	299
IR	0	57	572	627	627	627	287
Glenfield Beds	0	0	291	376	376	376	-55
LRI Beds	0	0	404	521	521	521	-33
Total Additional Operating Costs	**0**	**57**	**1,945**	**2,449**	**2,449**	**2,449**	**499**
Capital Charges:							
Depreciation	0	0	437	583	583	583	583
Interest	6	266	522	526	504	482	461
Return on Assets	0	0	(429)	(406)	(384)	(361)	(338)
Total Capital Charges	6	266	530	702	703	704	705
Total Impact on I&E	**6**	**323**	**2,475**	**3,150**	**3,151**	**3,152**	**1,204**

Operational Costs can be analysed by cost areas in the following way

Table 90 - Operational Costs Analysed by Cost Areas

Impact on Income and Expenditure	2017/18 £'000	2018/19 £'000	2019/20 £'000	2020/21 £'000	2021/22 £'000	2022/23 £'000	2023/24 £'000
Consultants	0	14	(32)	(70)	(70)	(70)	(303)
Mid Grades	0	0	317	423	423	423	0
Nursing	0	0	685	913	913	913	0
Scientific and Technical	0	43	350	380	380	380	0
Facilities Management	0	0	510	765	765	765	765
Non Pay	0	0	115	37	37	37	37
Total Additional Operating Costs	**0**	**57**	**1,945**	**2,449**	**2,449**	**2,449**	**499**

Non-operating costs have been allowed for in the Trust's Long-Term Financial Model (LTFM). For the Trust to maintain the deficit reduction trajectory in the Financial Strategy, the

operating cost revenue impact of this development is only affordable if the development is funded by the £4m per annum allowance made in the Financial Strategy for annual operating cost pressures. This approach has been supported by the Trust Board.

6.3.2 Methodology

The additional costs have been based on the proposed service reconfigurations reflecting restructured services and rotas. The workforce costs have been through an internal confirm and challenge process at Executive level and they have been identified as legitimate increases in costs as a result of the reconfiguration. All these costs are deemed to be transitional costs incurred until the Trust consolidates on to two sites. The costs reflect posts at mid-point or current incremental levels, with appropriate on costs and enhancements. Middle grade Doctors have been assumed to have an average cost of £70,000 per annum (based on average current cost).

A key assumption is that the Trust is able to recruit staff. If there is any difficulty in recruiting and there is a requirement for recruiting at premium rates this would create an additional cost pressure. Currently the full year effect of the OBC in workforce terms is £1.647 million; a 50% premium cost in relation to failure to recruit could be as much as £823,000 per annum.

Since this case is predicated on a lift and shift of activity and no growth, no additional income has been assumed as a result of increasing critical care capacity.

6.3.3 Workforce

The capital investment will provide a sustainable physical solution for the location of ICU beds and related services at the GH and LRI. The workforce costs relate to additional core training (CT) level, middle grade doctors and consultant costs required at the GH and the LRI, additional emergency theatre capacity and additional Interventional Radiology resource spread over three sites, as opposed to the current 2 site service for general surgery and transplant. There is also a requirement for additional staff to support an enhanced retrieval service to transfer any patient at LGH requiring Level 3 ICU support to either the LRI or GH.

Table 91 below details the changes in costs which have been assessed as being necessary to deliver the scheme.

Table 91 - Workforce Costs

	WTE	2018/19 £'000	2019/20 £'000	2020/21 £'000	2021/22 £'000	2022/23 £'000	2023/24 £'000
Glenfield Critical Care							
Consultants	1.00	0	88	117	117	117	0
Mid Grades	5.00	0	270	360	360	360	0
Nursing	4.00	0	111	148	148	148	0
Total Critical Care	**10.00**	**0**	**469**	**625**	**625**	**625**	**0**
Interventional Radiology							
Consultants	0.50	14	27	81	81	81	0
Scientific and Technical / Nursing	7.96	43	86	259	259	259	0
Total Interventional Radiology	**8.46**	**57**	**113**	**340**	**340**	**340**	**0**

	WTE	2018/19 £'000	2019/20 £'000	2020/21 £'000	2021/22 £'000	2022/23 £'000	2023/24 £'000
Glenfield Wards							
Consultants	(2.35)	0	(215)	(286)	(286)	(286)	(303)
Nursing Theatres	10.13	0	219	292	292	292	0
Scientific and Technical	5.10	0	91	121	121	121	0
Total Glenfield Wards	**12.88**	**0**	**96**	**128**	**128**	**128**	**(303)**
LRI Wards							
Consultants	0.15	0	14	18	18	18	0
Core Training Doctors	1.00	0	47	63	63	63	0
Nursing	14.01	0	354	473	473	473	0
Total LRI Wards	**15.16**	**0**	**415**	**554**	**554**	**554**	**0**

ICU Extension GH

There is a requirement for 10 additional consultant Planned Activities (PAs) resulting from the inefficiency of overseeing a smaller unit at the LGH and to support the retrieval service that needs to be enhanced to cover the additional transfers from the LGH to the GH and LRI ICUs. In addition to the additional PAs there is a need for two Clinical fellows to support the retrieval service.

From a medical perspective anaesthetics have run successful recruitment campaigns internationally and these links will be used to recruit to the additional vacancies for trainees.

As a result of the overall reconfiguration of ICU there is requirement for additional critical care nursing to support the isolated HDU particularly at the LRI. HDU staffing has been assumed to be 1 staff to 2 beds, with an allowance being made for additional staff to cover any absences from the ward as a result of patient movements.

These costs will be negated once the overall Reconfiguration Programme is complete and acute services move off the LGH.

Interventional Radiology

The capital investment will provide a sustainable physical solution for the provision of IR services at GH while still retaining a presence on the LGH site.

The workforce costs relate to additional consultant and radiography staff required at GH and LRI.

The cost of additional radiography staff has been based on the future workforce model that will be in place across GH and LGH following the Level 3 ICU Reconfiguration.

The CSI CMG has recently had success with International recruitment of Italian Radiographers and such resource will be used to meet the radiographer requirements of this OBC. The Trust has allowed for recruitment to posts 6 months before the service starts to support extended training needs for staff recruited to interventional radiology.

There is some risk in the recruitment of nursing staff for interventional radiology as these posts can be challenging to recruit to.

Glenfield Wards

The capital investment will allow for the transfer of HPB and renal transplant to the Glenfield site. As a result of this, additional costs will be incurred whilst the Trust is still running some acute services from three sites, particularly whilst there remains a need for Surgical Assessment Units on all three sites. The changes in workforce are described below:

Pharmacy

Pharmacy dispensary costs will increase as a result of the need to maintain dispensary opening hours at LGH whilst transferring workload to the other two sites. The staff associated with the beds relocating from LGH will need to move to LRI or GH to support the increased workload on these two sites, leading to a shortfall in the staff remaining to support the LGH dispensary. As the LGH dispensary already operates on minimal staffing i.e. a single pharmacist at any one time, the same number of staff will be required to support the LGH dispensary even though the workload has dropped. The workload in the dispensaries at GH and LRI is already of a level that they cannot absorb the additional workload without staff transferring.

The Pharmacy department has sought to minimise cost implications and has reviewed and proposed changes in its ways of working as a result. The additional workforce required is as follows:

- 1.0 WTE band 5 technician;
- 0.5 WTE band 7 pharmacist;
- 1.0 WTE band 8a pharmacist (0.5 WTE renal and 0.5 WTE dispensary);
- £20k (non-recurrent) non-pay costs.

There are no recruitment challenges envisaged for the pharmacy posts.

Dietietics

There is a requirement for additional dietetic support as a result of the changes in configuration of clinical services:

- 0.1 WTE band 6 dietician is linked to general surgery moves as the colorectal dietician will now cover emergency and elective inpatient surgery at the LRI and outpatients including pre assessment clinics at the LGH;
- 0.1 WTE band 7 dietician is linked to HPB. The HPB dietician will now cover emergency and elective inpatient surgery at the GH and outpatients including pre assessment clinics at the LGH;
- 0.1 WTE band 7 dietician and 0.1 WTE band 6 dietician is linked to renal services. Currently renal dieticians work across the LGH and Loughborough Hospital site. A three site model is proposed. A transplant dietician will be needed at the Glenfield several times a week to help manage unstable inpatients.

There are no recruitment challenges envisaged for the dietetics posts.

Ward Staffing

The proposed ward configuration at each of the three sites to accommodate the proposed service changes increases the bed base across the three sites by 15, with a change in configuration which increases the total number of wards by one. As a result of this, there are additional ward manager costs and particularly ward nursing costs at night, where minimum levels of staffing are required. The increase is staffing has been allowed for within the LRI beds costs.

Anaesthetic Consultants

As part of the vascular development, additional anaesthetic PAs were allowed for to support the temporary position until other critical care services moved from the LGH. The critical care service move will allow the Trust to save this non recurrent cost.

Theatre Staffing

Additional theatre staff have been identified to support the emergency theatre at the Glenfield supporting the additional HPB and transplant work.

LRI and GH Wards

Key to the removal of Level Three patients to the LRI and GH sites is the implementation of a robust workforce plan to directly support the case mix of patients at all three sites and provide a safe level of care appropriate to the acuity of patients.

Overall, the plan aims to:

- Ensure the appropriate supply and skill mix of staff to service a revised model of care described within the operational policies;
- Ensure an appropriate supply and skill mix of staff to support a short term change in the physical location of General Surgery wards and Gynaecology beds for Level 3 patients;
- Ensure an appropriate supply and skill mix of staff to support the splitting of HPB, General Surgery and Urology beds through a different configuration at the LRI, LGH and GH sites;
- Provide an opportunity for repatriation of General Surgery from Specialist Surgery to prevent outliers.

The service changes have created a number of new and revised models of care and physical location of beds required to ensure the safety of Level 3 patients until such time as all staff are consolidated onto a two-site model of working.

The move of General Surgery Level three patients from LGH to LRI has created the requirement for additional staffing at the LRI site which is summarised in the table below.

Table 92 - Additional Staffing Following Move of General Surgery L3 Patients from LGH

Band	Current	Proposed	Change	Average Salary £'000	Additional Cost £'000
7	6.00	6.00	0.00	45	0
6	13.41	15.00	1.59	42	66
5	83.75	91.98	8.23	35	285

Band	Current	Proposed	Change	Average Salary £'000	Additional Cost £'000
4	2.00	5.00	3.00	29	86
3	2.92	1.00	(1.92)	25	(48)
2	63.41	69.56	6.15	23	142
1	11.92	8.80	(3.12)	18	(57)
Ward Clerk	7.40	8.00	0.60	22	13
Total	**190.81**	**205.34**	**14.53**		**488**

Ward 21 – Elective Colorectal based on 22 beds, with 1:3 Nurse to bed ratio (NTBR), 60/40 Skill mix split of qualified to unqualified, which mirrors the nurse to bed ratio on ward 22 at the LGH. We know that the acuity on ward 22 is high and the NTBR does not match the acuity of patients on the ward.

Ward 16 – Emergency Surgical Assessment Unit, 22 beds including a chaired triage area. Staffing is modelled on the existing SAU at the LRI; nurse staffing levels at 1:66 NTBR with a 60/40 split of qualified to unqualified. The SAU's at LGH are currently on 1:45 nurse to bed ratio, however, we will be reducing assessment beds across the CMG from 82 beds to 76 beds which will lead to a higher throughput across the beds.

HPB – These currently have a high demand on level 3 beds and are a high user of the Surgical Acute Care Unit (SACU) beds at the LGH. The SACU at the LGH will close and 4 SACU beds will be integrated into the elective 28 bed HPB ward at the GH. There will be a separate emergency 24 bed HPB admissions ward which will be staffed at 1:14 NTBR with a 60/40 skill mix split of qualified to unqualified. This ward will take direct HPB admissions from GPs, ED and tertiary out of county referrals.

Urology Male/Female Emergency and elective needs in total 39 beds which will remain at the LGH with the following breakdown:

- Male Urology : 25 beds;
- Female Urology: 14 beds.

Due to the configuration of wards and the wards being single sex at the LGH, and Infection Prevention requirements for separating elective and emergency patients, this may require more collaboration with other CMG's to reach a workable conclusion depending on wards that are suitable.

Ward 20 – In order to create theatre capacity at the LRI and GH, daycase and 23 hour stay will be consolidated at LGH (from LRI and GH), onto LGH Ward 20 which has 16 beds. No additional efficiencies have been assumed in terms of these beds. If day cases currently undertaken at GH move to LGH then the staff costs included in the breast care budget to staff the surgical day case bay on Ward 24 at GH should be repatriated to CHUGGS.

Medical Workforce

One additional Core Trainee (CT) has been identified to ensure fully compliant rotas. As Junior Doctors provide out of hours cover across various specialties, the transfer of colorectal, HPB and transplant services will have an impact on junior medical staff cover in surgery, urology, nephrology and cardio-thoracic surgery. All the junior doctors rotas in these specialties have been reviewed and new draft rota templates developed. The net additional requirement is for one further core level post to provide adequate out of hours cover for HPB, breast surgery, vascular and transplant patients at GH site, whilst maintaining adequate training provision.

Theatre Staff

The move of General Surgery to the LRI from the LGH requires 4.5 additional emergency theatre sessions per week. The appropriate staffing and skill mix has been modelled for theatre practitioners delivering scrub, recovery, operating department (ODP) and support worker functions within the theatre setting.

6.3.4 FM Costs

The Trust has reviewed the FM costs associated with each development in respect of addition services to the new areas and savings on areas from which services have moved.

Table 93 - FM Costs

	Additional Costs £'000	Savings £'000	Net Position £'000
ICU	299	0	299
Glenfield Wards	874	626	248
Interventional Radiology	412	161	250
LRI Wards	776	809	-33
Total	**2,361**	**1,596**	**765**

6.3.5 Capital Related Revenue Costs

The other major cost element is the capital costs. The capital itself has been assumed to be funded through Interim Capital Support Loan (ICSL). The revenue consequences represent the interest on the loan provided and depreciation. It has been assumed that refurbishment costs do not add to the value of the existing asset and depreciation has been assumed on the new build construction costs and equipment. An average asset life of 40 years has been assumed for buildings and 15 years for equipment The 15 years for equipment allows for the fact that some equipment will reflect the fabric of the building and include fixtures and fittings which will have a longer asset life than medical equipment.

The table below shows the basis of the capital charges calculation.

Table 94 - Capital Charge Impact of Scheme (ICSL)

Critical Care Capital Charges	2017/18 £'000	2018/19 £'000	2019/20 £'000	2020/21 £'000	2021/22 £'000
Opening Balance		1,438	28,830	30,490	29,258
Drawdown	1,438	27,392	1,968		
Loan Repayments		0	-308	-1,232	-1,232
Closing loan	1,438	28,830	30,490	29,258	28,026
Interest on loan (14 October 2017 rate 1.76%)	6	266	522	526	504
Return on Asset	0	0	(429)	(406)	(384)
Depreciation	0	0	437	583	583
Total Capital Charges and interest	**6**	**266**	**522**	**526**	**504**

6.4 Impact on Trust Income, Cash Flow and Balance Sheet

The table below sets out the impact on the Trust's balance sheet.

Table 95 - Impact on the Trust's Balance Sheet

	2017/18 £'000	2018/19 £'000	2019/20 £'000	2020/21 £'000	2021/22 £'000
Opening Balance		1,438	28,830	18,227	17,645
Capital Expenditure	1,438	27,392	1,968		
Impairment			(12,134)		
Depreciation		0	(437)	(583)	(583)
Closing Balance	1,438	28,830	18,227	17,645	17,062

An impairment of £12.1 million has been assumed relating to the cost of refurbishment (which is unlikely to add to value) and the costs over and above construction costs for the new build elements. This figure will be accounted for in the Trust's Income and Expenditure Account but will not impact on the Trust's financial performance as it is treated as an adjustment to the reported financial performance of the Trust.

6.5 Affordability

The scheme identifies increases in recurrent revenue costs aside from capital charges and interest payments on the loan funding. All the workforce costs identified are viewed to be non-recurrent and will not be incurred after the Trust consolidates its acute services on to two sites.

The Trust Financial Strategy, approved by the Trust Board in November 2017, assumes that the operating cost impact of site reconfiguration will be zero and the non-operating costs impact will be as per the capital programme.

Therefore, if the Trust is to maintain the deficit reduction trajectory in the Financial Strategy the operating cost revenue impact of this development is only affordable if either:

- CIP targets are increased to offset these costs; or
- Transitional income is secured to offset these costs; or
- The development is funded by the circa £5m per annum allowance made in the Financial Strategy for annual operating cost pressures.

6.5.1 Long Term Financial Model (LTFM)

The current five year LTFM which reflects the detail of the Financial Strategy approved by the Trust Board in November 2017 is constructed in a way which aggregates this development as part of the general site rationalisation service development.

The assumptions regarding this service development are consistent with the overall assumptions in relation to the site reconfiguration.

As shown above, the case identifies additional operating costs of circa £57k in 2018/19, £1,995k in 2019/20, and from then on £2,523k until reconfiguration is achieved.

6.5.2 Capital Affordability

The scheme is assumed to be funded by treasury loans at the National Loan Fund rate.

7. The Management Case

7.1 Introduction

The management case details the project management and governance arrangements that UHL has put in place to support the delivery of this project. It sets out the following arrangements:

- Project management;
- Project plan;
- Change management;
- Business continuity;
- Benefits realisation;
- Risk management.

The project will be managed using PRINCE2 compliant methodology and project management tools such as Gantt charting and critical path analysis.

Project direction and management will be determined by the Project Board.

The costs associated with Project Management and Trust fees concerning the delivery of this project are displayed within the OBC Capital Cost forms (Appendix 41, 42, 43 and 44).

7.1.1 Premises Assurance Model

The NHS Premises Assurance Model (PAM) is a management tool that provides NHS organisations with a way of assessing how safely and efficiently they run their estate and facilities services.

It is a basis for:

- Allowing NHS healthcare providers to assure Boards, patients, commissioners and regulators on the safety and suitability of estates and facilities where NHS healthcare is provided;
- Providing a nationally consistent approach to evaluation NHS estates and facilities performance against a common set of questions and metrics;
- Prioritising investment decisions to raise standards in the most advantageous way.

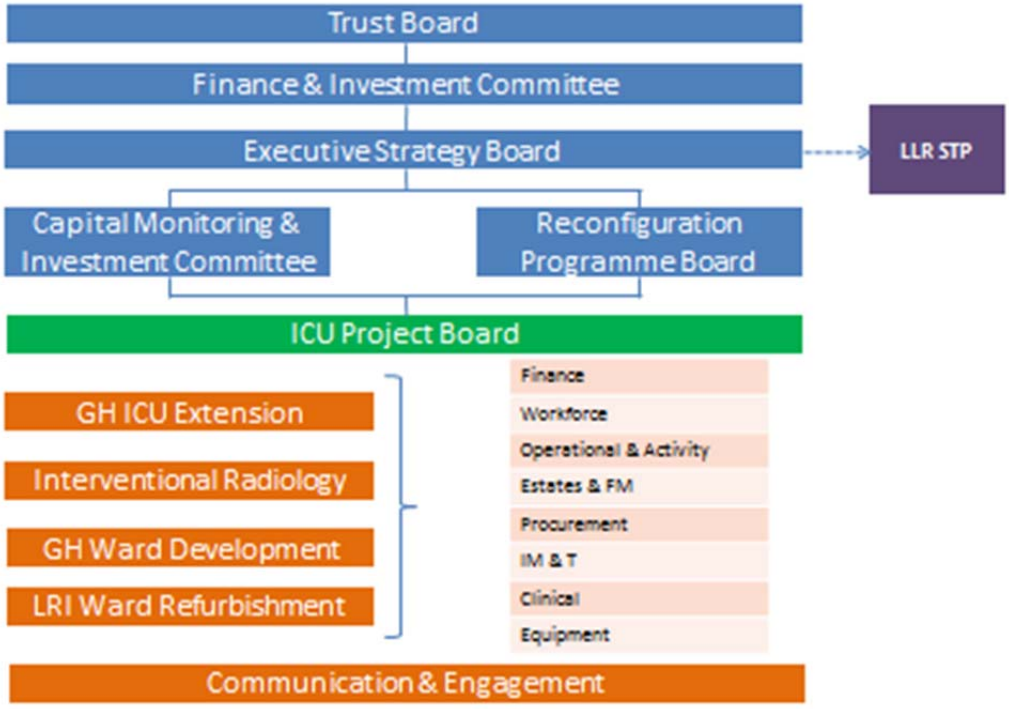
The PAM supports Boards, clinical leaders and Directors of Finance to make more informed decisions on the development of their estate and facilities services. It also provides important information to commissioners for use during the commissioning process and regulators in identifying risks.

The Trust has completed a PAM for this financial year, which was approved at Trust Board on 28th July 2017. This is attached at Appendix 45.

7.2 Project Management Arrangements

Project Governance arrangements have been established to reflect national best practice guidance and the Trust's own Capital Governance Framework, as shown in the diagram below:

Figure 18 - Trust Capital Governance Framework



7.2.1 The ICU Project Board

The project reports to the ICU Project Board. Key roles and responsibilities include:

- Responsibility for delivering the project within the parameters set within the OBC;
- Providing high level direction on stakeholder involvement and monitoring project level management of stakeholders;
- Providing the strategic direction for the project;
- Management and escalation of risk;
- Ensure continuing commitment of stakeholder support;
- Key stage decisions;
- Progress monitoring;
- Budgetary control and management;
- Change control procedures;

The key Project Board roles and responsibilities are outlined below.

Table 96 - Project Board Roles and Responsibilities

Role	Name	Responsibilities
Senior Responsible Officer	John Jameson, Deputy Medical Director and Debra Mitchell, Integrated Services Programme Lead (Joint SROs)	Responsibility to the Reconfiguration Board for delivery of the project to meet their terms of reference. Chair of the Project Board.
Project Manager	Sue Nattrass	Day to day responsibility for the development of the project, within the delegated role permitted by Project Board, including delivery of the business cases and stakeholder management.
Estates Lead - ICU Extension	Leigh Gates	Responsible for delivering the design solution upon receipt of suitable project brief and offering Estates expertise to the project. Responsible for reporting to the project board and delivery of the build stage
Estates Lead - Interventional Radiology	Tim Oliver	
Estates Lead - GH Ward Development	Debra Green	
Estates Lead - LRI Ward Refurbishment	Leigh Gates	
Project Clinical Lead	Chris Allsager	Overall clinical responsibility for models of care produced and structures determined suitable for inclusion within relevant business cases. Also responsible for offering clinical challenge to models put forward.
Clinical Lead - ICU Extension	Rakesh Vaja / Jacqui Redfern	Responsibility for ensuring that the design process reflects clinical needs and requirements within this OBC.
Clinical Lead - Interventional Radiology	Claire Maxim / Rosemina Ahmad / Kevin Mulcahy	
Clinical Lead - GH Ward Development	George Kenney	
Clinical Lead - LRI Ward Refurbishment	George Kenney	
Public and Patient Involvement (PPI) representative	Martin Caple	Is a member of the Project Board as the lead PPI representative working with the Project Manager to ensure PPI is integral to the project.
Finance Lead	Tim Pearce	Responsible for translating plans into cost and benefits and maintaining financial challenge around assumptions. Responsible for reporting to the Project Board.
Workforce Lead	Richard Ansell	Responsible for developing and challenging workforce plans and assumptions and providing strategic workforce context. Responsible for reporting to the Project Board.

Role	Name	Responsibilities
Organisational Development (OD) Lead	Bina Kotecha	Responsible for developing and delivery the project's OD strategy. Responsible for reporting to the Project Board.
Procurement Lead	David Streets	Responsible for developing and leading on procurement methodology. Responsible for reporting to the Project Board.

Regular progress reports are submitted to the UHL Reconfiguration Board for review and then onward reporting and management to the UHL Executive Strategy Board.

The project will subsequently move towards the creation of an operational commissioning team or teams. This will be constructed of suitable management and clinical representatives to allow the production of detailed implementation plan to operationally deliver the ICU Level 3 project. The team/s will operate within the existing governance of the project.

The end stage of the project will result in the completion, handover and commissioning of the new facilities. The Project Board is responsible for providing assurance that the project has been delivered in terms of product, quality and budget in line with the business case.

7.2.2 The UHL Reconfiguration Programme Board

This group is a designated committee appointed by the Executive Strategy Board (ESB) to which it reports. The Reconfiguration Programme Board's responsibilities include:

- Overall responsibility for the delivery of UHL's Reconfiguration Programme;
- Ensuring that developments are consistent with the Trust's strategic direction and Better Care Together / STP plans.

7.2.3 The Executive Strategy Board (ESB)

This group is a designated committee appointed by the Trust Board to which it reports. ESB's responsibilities include:

- Advising the Trust Board on formulating strategy for the organisation;
- Ensuring accountability by holding Board members to account for the delivery of the strategy and through seeking assurance that all systems of control are robust and reliable;
- To lead the Trust executively, in accordance with its values, to deliver its vision and, in doing so, help shape a positive culture for the UHL.

7.2.4 The Finance and Investment Committee (FIC)

This group is a designated committee appointed by the Trust Board, with responsibilities which include:

- Ensuring that strong financial governance and control is adhered to in business case preparation;

- Ensuring that capital and revenue implications of all business cases are fully understood;
- Ensuring that business cases represent best value for the Trust.

7.2.5 Project Work-streams

A number of work-streams have been set up to take responsibility for driving the key objectives and to report back to the Project Board on a regular basis. Key roles and responsibilities will include:

- Day to day responsibility for the delivery of the project to meet the parameters described within the business case;
- Provision of appropriate reports on status to the Project Manager;
- Management of risks and issues, and escalation of appropriate matters for executive direction/ approval;
- Providing working groups with detailed briefs;
- Monitoring, co-ordinating and controlling the work of the working groups;
- Drawing together the outputs of the working groups;
- Ensure continuing commitment of stakeholders, both internal and external.

7.3 Project Plan

The project will be managed in accordance with the principles of PRINCE2 methodology. The project manager will be supported by UHL's capital projects team and external specialists consultants as required.

7.3.1 Project Programme

The Project Programme is intended to deliver the project by summer 2019. The milestones for the whole ICU redevelopment programme are set out below:

Table 97 - Project Programme

Milestone Activity	ICU Extension GH	New Build Wards GH	IR GH	Ward Refurb LRI
Pre-planning Consultation	n/a	Oct 17	n/a	n/a
Trust Board approval of OBC	Nov 2017	Nov 2017	Nov 2017	Nov 2017
Full Submission of Planning Application	Submitted and received	Nov 2017	n/a	n/a
Trust Board approval of FBC	Feb 2018	Feb 2018	Feb 2018	Feb 2018
Planning Approval	Submitted and received	Jan 2018	n/a	n/a
Tender procurement construction works	Feb 2018	n/a	Feb 2018	Feb 2018
GMP received from Construction Partner	n/a	Feb 2018	n/a	n/a
NHSI FBC Approval	Apr 2018	Apr 2018	Apr 2018	Apr 2018

Milestone Activity	ICU Extension GH	New Build Wards GH	IR GH	Ward Refurb LRI
Award Enabling Works contract	n/a	n/a	Apr 2018	n/a
Commencement of Enabling Works	n/a	n/a	May 2018	n/a
Completion of Enabling Works	n/a	n/a	Jul 2018	n/a
Operational Commissioning and go live of Enabling works	n/a	n/a	Aug 2019	n/a
Award Construction Contracts	Apr 2018	Apr 2018	Jul 2018	Apr 2018
Commencement of construction	May 2018	May 2018	Sept 2018	May 2018
Construction complete	Feb 2019	Jul 2019	Apr 2019	Oct 2018
Operational Commissioning and go live	Mar 2019	Aug 2019	May 2019	Nov 2018

A Gantt chart style programme can be found at Appendix 46.

7.3.2 Contract Management Plan

Each construction component will have a cost advisor and contract administrator appointed.

7.4 Use of Special Advisers

Special advisers have been used in a timely and cost-effective manner in accordance with HM Treasury Guidance. The use of special advisers is outlined in the tables below:

Table 98 - Special Advisers: ICU Extension GH

Specialist Area	Adviser
Financial	Sedgwick Igoe and Associates LTD
Technical (Architect)	Chadwick Design Ltd.
Technical (Mechanical and Electrical)	Sutcliffe Consulting Engineers Ltd.
Technical (Structure Engineering)	Chadwick Design Ltd.
Cost advisor	Rider Levett Bucknall
BREEAM	Gleeds
Healthcare Planning	Capita Health

Table 99 - Special Advisers: IR GH

Specialist Area	Adviser
Financial	Sedgwick Igoe and Associates Ltd.
Technical (Architect)	CPMG
Technical (Mechanical and Electrical)	Pick Everard

Specialist Area	Adviser
Technical (Structure Engineering)	Curtins
Cost advisor	Rider Levett Bucknall
BREEAM	Gleeds

Table 100 - Special Advisers: New Build Wards GH

Specialist Area	Adviser
Financial	Sedgwick Igoe and Associates Ltd.
Technical (Architect)	MTX/IBI
Building/Construction Supplier	MTX
Technical (Structure Engineering)	Rossi Long
Cost advisor	Rider Levett Bucknall
PMO	Rider Levett Bucknall
BREEAM	Gleeds

Table 101 - Special Advisers: Ward Refurbishment LRI

Specialist Area	Adviser
Financial	Sedgwick Igoe and Associates Ltd.
Technical (Architect)	Chadwick Design Ltd.
BREEAM	Gleeds
Cost advisor	Rider Levett Bucknall

7.5 Outline Arrangements for Change and Contract Management

Change management associated with the project will be managed through the Project Board, under the chairmanship of the Senior Responsible Owner (SRO). Day to day change management issues will be discussed at the project workstream level and any resultant contract and/or cost changes will need to be approved by the Project Board.

The Trust has introduced a new Change Management process – see Appendix 47 – to promote consistency and deter changes outside of the governance structure of each project. This will impact upon all business cases where there is a need to:

- Change assumptions in an approved business case;
- Change costs impacting the capital plan;
- Change the reconfiguration delivery programme;
- Change scope which impacts upon another project.

This process will require any changes detailed above to be authorised by the Project Board, followed by the Reconfiguration Board.

7.6 Outline Arrangements for Benefits Realisation

The delivery of benefits will be managed through the Project Board.

The Benefits Realisation Plan is provided in Appendix 9 and includes detailed plans for each benefit covering the following:

- A description of the benefit;
- The baseline and target measure of the benefit;
- A summary of how the benefit will be achieved;
- Details of the timescale over which the benefit will be achieved;
- Identification of the lead directors responsible for delivering benefits.

Some of the key benefits to be realised are:

- Reduced length of stay;
- Reduced elective cancellations due to lack of ICU bed;
- Improved PLACE scores;
- Improved infection prevention.

7.7 Outline Arrangements for Risk Management

7.7.1 Introduction

The Project Board has undertaken a risk assessment to identify the major areas of risk and highlighted the controls currently in place, or to be put in place, to mitigate the risks.

The Trust monitors the risks that may affect the delivery of the project. Project risks are managed through the risk register (Appendix 10). This is a live document and as such will be amended as the project progresses. The project workstreams will monitor the risk and actions and will collectively review alterations to ensure a consistent approach. The risk register is also reviewed periodically at the Project Board, with the highest rated risks escalated to the Reconfiguration Board.

7.7.2 Risk Management Strategy

UHL's approach to risk management, in accordance with its Board Assurance Framework, the Capital Investment Manual and HM Treasury Green Book, is designed to ensure that the risks and issues are identified, assessed and mitigation plans developed in a risk management plan. All risks have a responsible owner identified.

The risk management approach for the programme is in accordance with PRINCE2 methodology.

Work stream leads have undertaken an initial identification and assessment of the risks to the project across the following themes:

- Estates;
- Finance;
- Equipment;
- Operational;
- Workforce;
- IM&T.

The project team has then reviewed each risk to provide a consensus scoring.

This details who is responsible for the management of risks and the required counter measures, as required.

7.8 Outline Arrangements for Post Project Evaluation

The outline arrangements for post implementation review (PIR) and project evaluation review (PER) have been established in accordance with best practice. The Trust is committed to ensuring that a thorough and robust Post Project Evaluation is undertaken at key stages in the process to ensure positive lessons can be learned from the project and from other projects that can inform processes undertaken.

7.8.1 Post-Occupancy Evaluation

Post-Occupancy Evaluation (POE) is the process of obtaining feedback on a building's performance once in use. POE is valuable, particularly in healthcare environments, where poor building performance will impact on running costs, occupant well-being and business efficiency.

Post-Occupancy Evaluation will:

- Highlight any immediate teething problems that can be addressed and solved;
- Identify any gaps in communication and understanding that impact on the building operation;
- Provide lessons that can be used to improve design and procurement on future projects;
- Act as a benchmarking aid to compare across projects and over time.

The Trust will confirm in the Full Business Case the means by which it will procure POE for this project.

7.8.2 Post Implementation Review (PIR)

This review will ascertain whether the anticipated benefits have been delivered and will take place 12 months following the delivery of the project and will be monitored on an annual basis is subsequent years.

7.8.3 Project Evaluation Reviews (PERs)

Within UHL, PERs have recently been undertaken for both the Emergency Floor Project and the relocation of vascular services. Key learning from these projects, which is being applied within this project, is detailed below.

The Emergency Floor review was undertaken by the Trust's Internal Auditors PWC through a series of interviews.

The process adopted within the vascular project was one of a SurveyMonkey questionnaire, which was sent to a wide range of stakeholders of the project. The questionnaire covered a number of themes, which had been identified within the process for the EF project:

- Delivery enabling plans;
- Clear scope;
- Governance-enabling decision making;
- Smart financing;
- Agile change control;
- High performing teams.

This was followed up by a workshop, which considered key factors that had arisen in more detail. A report with key actions and lessons learned was submitted to both the Reconfiguration Board and Executive Strategy Board.

They key actions are listed below:

- **Governance enabling decision making** - The vision should remain consistent and documentation should be of sufficient quality to detail the project memory including decisions taken, sign off of plans and changes made throughout the project;
- **Delivery enabling plans** - The Reconfiguration Programme Board should ensure that account is taken of the phasing of Reconfiguration projects and there is explicit and comprehensive understanding and planning for the resource demand across schemes;
- **Clear scope** - Stakeholder engagement should be mapped early in the project to ensure the right input is secured at the right time;
- **Smart financing** - A scheme of delegation is now in place to support financial management by Project Boards. The budget structure will be agreed in advance and there will be a transparent process of reporting costs throughout the lifetime of the project;
- **Agile control plans** – Clinical operational and standard operating policies are critical in developing an understanding and documenting how a new facility will work in detail. These documents should be of a quality to enable this and should have sign off from all impacted and the Project Board. There should be an iterative process of review, validation and update throughout the lifetime of the project;
- **Agile control plans** – There should be implementation of formal checkpoints throughout the project development where designs are re-circulated and signed off by an agreed group;
- **High performing teams** – Ensure there is Organisational Development and support to a project during its earliest stages in the development of Clinical Operational Policies and Business Cases;

- **High performing teams** – Ensure that project planning includes appropriate resource / time for Operational Managers and this is acknowledged and agreed by Senior Managers;
- **High Performing Teams** – Ensure a two way feedback mechanism is in place between project members and their wider teams. Include a checkpoint at the end of Project Board meetings which confirms the key points / issues for onward communication with wider teams.

This project will include the above actions within its management process.

A similar process of PER will be undertaken for this project as was undertaken for the vascular project – with the adoption of questionnaires and workshops.

7.9 Gateway Review Arrangements

All significant public sector projects are required to complete the Office of Government Commerce (OGC) process of detailed peer review and assessment at key stages or gateways.

The requirement to register a project for formal review is based upon an initial Risk Potential Assessment (RPA). Completion of an RPA results in a project being classified as Low Risk (scoring 30 points or less), Medium Risk (31 – 40 points) or High Risk (41 points or more). The RPA for this project is attached at Appendix 48; and demonstrates a score of 38 (Medium Risk) which means that a formal Gateway review is discretionary.

The Trust appreciates that Gateway, Healthcheck and peer reviews provide valuable external perspective on the project including risks, stakeholder involvement, management and governance arrangements, costs and affordability. A Healthcheck review of this project was previously carried out in July 2015, where a Delivery Confidence Assessment Score of Amber was awarded. This means that "*Successful delivery appears feasible but issues require management attention. The issues appear resolvable at this stage of the programme/project if addressed promptly*." The report from this review can be found at Appendix 49.

A number of recommendations were made and these are outlined below along with the actions the Trust has taken to address them:

Table 102 - Recommended Actions Following July 2015 Healthcheck Review

Recommendation	Actions taken
The SRO should agree the business case format and process internally and with the NTDA and ITFF	This has been superseded by the recent, nationally managed capital application process. Agreement has been made with NHSI that one OBC and one FBC will be submitted to NHSI for the project.
The SRO should develop a detailed ICU implementation plan with a clear critical path	This has been superseded by the recently agreed timelines for OBC and FBC delivery, which have formed the basis of a new programme and implementation plan detailing the actions required from now until project completion.

Recommendation	Actions taken
Develop detailed contingency plans based on the critical path	Contingency plans were put in place and subsequently instigated when it became apparent the capital required to facilitate the moves was not available and the critical path was no longer achievable.
Develop a process for transfer of responsibility for the planning of the ICU project to accountability for its delivery.	A process for transferring responsibility between the planning and delivery phases of projects has been developed and was utilised during the recently completed Emergency Floor Phase 1 and Vascular projects.

On the basis that the RPA demonstrates a medium risk, and that a formal Healthcheck review has already been undertaken on this project, the Trust is not planning to undertake further Gateway or Healthcheck reviews as part of this project.

7.10 Contingency Plans

In the event that this project fails, the Trust will continue with the delivery of services at LGH and review the risk mitigations currently in place to assess their on-going delivery, and further mitigations which may need to be established to maintain service delivery at LGH in the longer term. If the Level 3 ICU service provision cannot be sustained the Trust will need to consider actions which reduce services at this site accordingly.

Appendices

These can be found as separate files but are listed below for convenience:

Appendix 1. Letter from DH Confirming National Support for UHL's £30.8m Capital Bid
Appendix 2. Letter from NHSI Confirming Business Case Process for Accessing Capital
Appendix 3. Letter of Support from NHSE
Appendix 4. Letter of Support from LLR Commissioners
Appendix 5. 2014 UHL Estates Strategy and Development Control Plan (DCP)
Appendix 6. 2015 LLR Estates Strategy
Appendix 7. Activity Model – ICU
Appendix 8. Activity Model – Surgery
Appendix 9. Benefits Realisation Plan
Appendix 10. Risk Register
Appendix 11. Generic Economic Model (GEM) – Overall
Appendix 12. Generic Economic Model (GEM) – ICU Expansion GH
Appendix 13. Generic Economic Model (GEM) – Interventional Radiology GH
Appendix 14. Generic Economic Model (GEM) – Additional Beds GH
Appendix 15. Generic Economic Model (GEM) – Additional Beds LRI
Appendix 16. Clinical Operational Policy – ICU
Appendix 17. Clinical Operational Policy – Interventional Radiology
Appendix 18. Clinical Operational Policy – HPB
Appendix 19. Clinical Operational Policy – Transplant
Appendix 20. Clinical Operational Policy – General Surgery
Appendix 21. Due Regard
Appendix 22. Derogation Schedule – ICU Expansion GH
Appendix 23. Derogation Schedule – Additional Beds GH
Appendix 24. Derogation Schedules – Interventional Radiology GH
Appendix 25. Workforce Plan
Appendix 26. SBS Framework
Appendix 27. 1:200 drawing – ICU Expansion GH
Appendix 28. 1:200 drawing – Interventional Radiology GH
Appendix 29. 1:200 drawing – Additional Beds GH
Appendix 30. 1:200 drawing – Additional Beds LRI
Appendix 31. Schedules of Accommodation – ICU Expansion GH

Appendix 32. Schedules of Accommodation – Interventional Radiology GH
Appendix 33. Schedules of Accommodation – Additional Beds GH (HPB)
Appendix 34. Schedules of Accommodation – Additional Beds GH (Transplant)
Appendix 35. Schedules of Accommodation – Additional Beds LRI
Appendix 36. BREEAM Pre-assessment Report
Appendix 37. Sustainability Management Plan
Appendix 38. 2013 Travel Plan
Appendix 39. Planning Permission
Appendix 40. Land Transactions
Appendix 41. OB Forms – ICU Expansion GH
Appendix 42. OB Forms – Interventional Radiology GH
Appendix 43. OB Forms – Additional Beds GH
Appendix 44. OB Forms – Additional Beds LRI
Appendix 45. Premises Assurance Model (PAM)
Appendix 46. Programme
Appendix 47. Change Control Process
Appendix 48. Risk Potential Assessment (RPA)
Appendix 49. Healthcheck Review Report