gleeds

JERSEY FUTURE HOSPITAL PROJECT

CHANGE REQUEST NO 21

QUALITY ASSURANCE

Sign off: Terry Langdon

Position: Director

CO021 – Updated Site Options Appraisal to include 'Site E – Peoples park'

September 2015

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STATES OF JERSEY

FUTURE HOSPITAL PROJECT

CHANGE REQUEST NR. 21

VERSION CONTROL

Version	Date Issued	Brief Summary of Change	Owner's Name
0.1	9th September 2015	Preparation of baseline report from CR004 V16	N Aubrey
0.2	11th September 2015	Editorial update of introduction and executive summary	N Aubrey
0.3	13th September 2015	Editorial update of Part A	N Aubrey
0.4	18th September 2015	Editorial update to Option E	N Aubrey
0.5	22nd September 2015	Editorial update to Option E	N Aubrey
0.6	24th September 2015	Editorial rework - to full report	N Aubrey
0.7	25th September 2015	Update of programmes and schedule of enquiries	R Heywood
0.8	Not issued	Editorial rework	N Aubrey
0.9	30th September 2015	Editorial rework to full report	N Aubrey
0.10	1st October 2015	Minor updates following SoJ review QA corrections	R Heywood
0.11	8th October 2015	QA update following GEM and assurance outcomes	N Aubrey
0.12	9th October 2015	QA Review	T Langdon
0.13	12th October 2015	Minor update to programme images following SoJ review	R Heywood
0.14	16th October 2015	Update following assurance comments	R Heywood

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1 Glossary of Terms

ADB	Activity Data Base Sheets
All-in TPI	All-in Tender Price Index published by BCIS
ASS	Acute Services Strategy
BCIS	Building Cost Information Service of the RICS
BIM	Building Information Modelling
BQ	Bill of Quantities
BRE	Building Research Establishment
BREEAM	Building Research Establishment Environmental Assessment Model
Brief	Feasibility Site Option Appraisal Brief 'FH – 1.6 – Change Order 004 – Variation to Options Appraisal – 20141230'
Capex	Capital expenditure(s)
CDM	Construction Design & Management Regulations 2007
CDU	Clinical Decision Unit
CO004	Change Order 4 – Review of four site options, report presented April 2015
CO018	Change Order 18 – Long list review of additional park sites, report presented August 2015
CO021	Change Order 21 – Review of five site options, including Option E People's Park
COM	The Council of Ministers of the States of Jersey
Contracting Authority	The States of Jersey
CPI	Consumer Price Index
CR004	Change Request 4 - See CO004
CR018	Change Request 18 - See CO018
CR021	Change Request 21 - See CO021
DCAG	Departmental Cost Allowance Guide. Previously published by the UK Department of Health, now superseded by HPCGs.
DOH	UK Government Department of Health
EAU	Emergency Assessment Unit
EPI	Equipment Price Index
EY	The Contracting Authority's Financial Advisor
FAE	Functional Area Estimate

FBC	Full Business Case
Financial Advisor	One part of the ICA Team
Financial Direction	The directions issued by the Treasurer of the States of Jersey
GBCI	General Building Cost Index published by the BCIS
GEM	Generic Economic Modelling
GIFA	Gross Internal Floor Area
GMS	Gleeds Management Services
HBN	Health Building Note
HPCG	Healthcare Premises Cost Guide
HSSD	The Health and Social Services Department of the States of Jersey
HTM	Health Technical Memorandum
ICA	The team of Independent Client Advisors
ICT	Information and Communication Technology
IPT	The team comprising of the Client Team, ICA Team and Supply Team
ITT	The Invitation to Tender Document
JFH	Jersey Future Hospital
JGH	Jersey General Hospital
JIFC	Jersey International Finance Centre
KPIs	Key Performance Indicators
LCC	Life Cycle Cost
Legal Advisor	The legal entity that enters into the Contract with the Contracting Authority to provide the legal and commercial advisory and consultancy services. One part of the ICA Team.
LOD	The Law Officer's Department of the States of Jersey
LPA	Local Planning Authority
MEAT	Most Economically Advantageous Tender
MEP	Mechanical, Electrical & Public Health Engineering Services
MIPS	Median Index Pricing Study
MOG	The Ministerial Oversight Group of the States of Jersey
NPV	Net present value
OBC	Outline Business Case
ONS	United Kingdom Office for National Statistics
OPD	Outpatients Department

Opex	Operating expenditure
Optimism Bias	Empirically determined adjustment to redress the tendency toward overly optimistic project appraisal
Procurement	The process of obtaining a tender
Project	The Future Hospital Project
Project Board	The Board of the Project, assembled quorate
Project Director	The sponsor of the project, who reports to the Chairperson of the Project Board
Project Team	Those operational staff assembled by the Contracting Authority to manage the delivery of the Project
PUBSEC	Public Sector Tender Price Index published by the BCIS
QA	Quality Assurance
QRA	Quantified Risk Analysis
Refined Concept	The Dual Site refined concept Addendum to the Strategic Outline Case, as prepared by WS Atkins October 2013
RICS	Royal Institution of Chartered Surveyors
RPI	Retail Price Index
RPIJ	Retail Price Index Jevons
Supply-Chain Procurement Strategy	The procurement strategy developed by the Contracting Authority (with support from the ICA Team)
SMART	Specific Measurable Achievable Realistic Time Related
SMEs	Small & Medium Enterprises
SOC	Strategic Outline Case, as prepared by WS Atkins May 2013
SOJ	States of Jersey
SOJDC	States of Jersey Development Company
SOJTES	States of Jersey Technical and Environmental Services
SRO	Senior Responsible Owner (the Treasurer of the States of Jersey)
Stakeholders	The organisations or departments of the Contracting Authority that have an interest in the successful delivery of the Services
States Assembly	The elected officials of the States Assembly
States Member	A member of the States Assembly
Strategic Brief	The strategic brief of the project, as contained in the Services Information
Technical Advisor	The Consultant
TTS	Transport and Technical Services Department of the States of Jersey

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2 Table of Contents

3 Executive Summary

3.1 This 'updated' Site Options Appraisal has been prepared by Gleeds as the Lead Advisor to the Future Hospital project following our review of an additional site to the four options reviewed within the CR004 report.

3.2 It has been completed using the best available data and reflects both UK Treasury Business Case Guidance and Best practice in healthcare design and pricing. It also reflects the most recent activity and bed modelling analysis completed by EY and the outcomes of the emerging Acute Services Strategy being developed by HSSD.

3.3 In this respect it brings together all previous reports provided to Ministers including the CR004 report and the subsequent corrigendum issued to it.

3.4 The appraisal process and review methodology has been fully and equally applied to all sites including the additional fifth site, and has previously been independently assured by EY (Ernst & Young) as being broadly robust and valid.

3.5 The economic modelling of all outcomes has been completed by EY using a UK Treasury General Economic Model [GEM] and again separately assured by an independent EY Team.

3.6 The four initial options and additional fifth option considered were:

Option A	Retention of the 'Refined Concept Dual Site Option' as a benchmark of the minimum investment necessary to achieve acceptable benefits in safety, sustainability and affordability – i.e. the "Do Minimum".
Option B	100% new build hospital at Overdale Hospital and adjacent land;
Option C	100% new build hospital on the current General Hospital site and adjacent land;
Option D	100% new-build hospital on the best performing alternative site identified during the Pre-feasibility being site 14C "the Waterfront"
Option E	100% new-build hospital at People's Park (the additional option).

3.7 In the interests of cost efficiency and to maintain comparability with the previous Strategic Outline Case and Refined Concept Addendum produced in October 2013, the spatial planning for all options has been based on achieving a 15% reduction against current UK health building standards.

3.8 On this basis the appraisal concluded that:

- Option 'E' being a 100% new hospital at People's Park, would be delivered at the lowest capital cost of £426.8m, would result in the lowest 60 year Net Present Value and, could be delivered in the joint shortest timescale of under 7 years from the date of this report;
- Option 'E' being a 100% new hospital at the People's Park scored significantly higher than all other options in terms of delivered benefits;
- Option 'D' being a 100% new build at the Waterfront scored better than all other options in terms of risk. However, in comparison to Option 'E' this improvement related largely to the technical team's view of the risk associated with the acquisition of the Park;
- Option 'A' being the dual site option ranked the poorest in terms of benefits and risk and also in terms of overall cost due to the length of programme required to deliver it on an operational site;

3.9 UK Treasury Green Book guidance recommends that, at this strategic stage, the differential value offered by different options is compared by calculating the quantum of Net Present Value required to secure each benefit point. On this basis;

- Option 'E' being People's park scored significantly better than all other options and as a result achieved the best value in terms of NPV/weighted benefit point

	Option A	Rank	Option B	Rank	Option C	Rank	Option D	Rank	Option E	Rank
Capital Cost [£m]	503.8	4	445.5	2	629.7	5	470.5	3	426.8	1
Delivery period (from Q1 2016	11 years, 5 months		6 years, 8 months		11 years, 5 months		6 years, 8 months		6 years, 8 months	
60 Year NPV [£m]	4,092	5	3,971	2	4,054	4	4,002	3	3,938	1
Raw Risk Score	237	5	207	4	203	3	94	1	114	2
Weighted Risk Score	9.94	5	8.68	4	8.24	3	3.06	1	3.58	2
Raw Benefits Score	49	5	63	4	79	3	106	2	117	1
Weighted Benefits score	1.69	5	2.30	4	2.76	3	3.77	2	4.20	1
NPV/weighted benefit point	2,421.4	5	1,727.4	4	1,467.4	3	1,060.4	2	938.3	1

Table 1: Option Rankings following benefit, risk and cost assessment

3.10 On the basis of the evidence established within the report it is clear that Option 'E – 100% new build hospital at People's Park is the preferred location to be taken forward to detailed design.

4 Introduction

4.1 In 2011 Ministers embarked on an investigation into the options available for the renewal of Jersey's general hospital facilities. This followed from a collective awareness of:

- An ongoing and escalating deterioration in the overall condition of the Hospital which was leading to increased maintenance expenditure and an increasing risk of catastrophic failure;
- The general arrangement of buildings at the current Hospital being problematic with their age and condition preventing the implementation of best practice standards in many areas;
- Modern healthcare processes and efficiency improvements being impractical to adopt within the outdated buildings; and
- The KPMG Report '*A proposed new system for Health and Social Services (2011)*' making it clear that the current hospital was no longer fit for purpose and that replacement would be required by 2020.

4.2 Following their review of a number of earlier reports, Ministers instructed a further 'Site Validation Appraisal' of four possible site options for the location of the future hospital. These were:

Option A	Retention of the 'Refined Concept Dual Site Option' as a benchmark of the minimum investment necessary to achieve acceptable benefits in safety, sustainability and affordability – i.e. the "Do Minimum".
Option B	100% new build hospital at Overdale Hospital and adjacent land;
Option C	100% new build hospital on the current General Hospital site and adjacent land;
Option D	100% new-build hospital on the best performing alternative site identified during the Pre-feasibility being site 14C "the Waterfront"

4.3 This work was completed by Gleeds as the Lead Advisor in April 2015 and resulted in Ministers being presented with the CR004 report which concluded in 'Option D – The Waterfront' being ranked as the most favourable.

4.4 However, in considering the detailed findings of this report, Ministers identified two further site options which were felt to offer comparable or better prospects than the four evaluated options.

4.5 These were subsequently tested at a high level using the same 'long-list' testing process that had previously been used to identify the four sites already reviewed.

4.6 This testing concluded that one of the sites being 'Peoples Park' merited further detailed appraisal comparable to that already completed for the four sites identified above.

4.7 Work to complete this additional site appraisal commenced in early September under CR0021, and sought to add its findings along with a general cost update, to the findings for the first four sites already reported to Ministers within the CR004 report.

4.8 The effect of this would be to provide Ministers with a report (this report) which comparatively sets out the appraisal findings for all five site options and establishes which site option was considered to perform best against a common series of parameters.

4.9 Ministers are asked to note that for brevity, and ease of drafting, this report has been structured as if the fifth site had been evaluated at the same time as the initial four sites considered within CR004.

Reaffirmation of previously rejected sites

4.10 The four site options selected for review within this detailed appraisal were based upon those that had been assessed as potentially viable within the earlier Strategic Outline Case and the subsequent Refined Dual Site Concept Addendum.

4.11 This process is consistent with UK Treasury Green Book guidance and is helpful in that it provides a clear means for deselecting sites and, provides a robust basis for supporting site selection within the Outline and Full Business Cases.

4.12 The Strategic Outline Case assessment process as further applied to two further sites identified separately by Ministers and which resulted in a fifth site People's Park being added to those shortlisted for detailed appraisal

4.13 The full findings of these reviews are contained in Appendix 2 and confirmed that, in the context of this exercise, both the basis for earlier site deselection and the previous deselection decisions remain robust.

Detailed Site options considered within this review

4.14 The detailed site / options reviewed within this validation exercise are set out below and have been extracted from the full project brief included at Appendix 1. In the interests of brevity these options will hereafter be referred to as Options A – E

Option	Budget	Spatial standard	New build element
A - Dual Site - (Existing General Hospital and Overdale) – New Build and Refurbishment Option	Capital: circa £297 million (see 5.31 for further detail). Revenue: Base Acute Service Planning Budget base with interventions determined from any specific costs of Dual Site operation.	85% of UK NHS Health Building Notes as a target wherever safe and sustainable to do so.	To be confirmed during optimisation of the Design but as per SOC Addendum would consist of a combination of new build refurbishment and existing use.
B - Overdale Hospital Site - and adjacent property – 100% New Build Option	Capital: To be determined by Design. Revenue: Base Acute Service Planning Budget base with interventions determined from any specific costs of single site operation.	85% of UK NHS Health Building Notes as a target wherever safe and sustainable to do so.	To be confirmed during the optimisation of the Design and so could be 100% new build or new build refurbishment and existing use.
C - Existing General Hospital Site - and adjacent property – 100% New Build Option	Capital: To be determined by Design. Revenue: Base Acute Service Planning Budget base with interventions determined from any specific costs of single site operation.	85% of UK NHS Health Building Notes as a target wherever safe and sustainable to do so.	To be confirmed during the optimisation of the Design and so could be 100% new build or new build refurbishment and existing use.
D - Waterfront Site - (14C Zephyrus, Crosslands and Jardins de la Mer) – 100% New Build Option	Capital: To be determined by Design. Revenue: Base Acute Service Planning Budget base with interventions determined from any specific costs of dual site operation.	85% of UK NHS Health Building Notes as a target wherever safe and sustainable to do so.	100% New Build.
E – Peoples Park – 100% New build	Capital: To be determined by Design. Revenue: Base Acute Service Planning Budget base with interventions determined from any specific costs of dual site operation.	85% of UK NHS Health Building Notes as a target wherever safe and sustainable to do so.	100% New Build.

Table 2: Options under review

Confirmation of Key Objectives

4.15 The following key objectives have been derived from the project brief:

- To carry out the technical and financial testing of a number of sites within hospital development parameters defined by the Project Board;

- To undertake the site technical and financial testing in a manner that is efficient and compliant with UK best practice and UK Treasury Green Book Guidance;
- To provide technical and financial testing outcomes that are clear and meaningful for others within the project team and wider States of Jersey;
- To use activity forecasts and other advice to identify how facilities suitable for 60 years could be delivered;
- To test the constructability of each option against a 10 year delivery limit indicated by a previous Council of Ministers.

5 Part A – Evaluation Approach and site appraisal methodology

General Approach

5.1 Gleeds approach to healthcare appraisal draws heavily on contemporary UK best-practice both in terms of technical assessment methods and in terms of Option Appraisal. In the context of this site validation, review methods that reflect contemporary UK Treasury Green Book Guidance have been selected to provide comparability with previous project Reports and to support the eventual development of the Project's Outline Business Case.

5.2 The key appraisal activities relating to the review of each site and to the overall validation exercise were brought together into a structured work programme that recognised the interdependence of each activity and the need to secure Project Board approval at key points in the process.

5.3 Notwithstanding the above, the Project's timeframe made it necessary for many tasks to be undertaken concurrently. Health Planners, Architects, Engineers and Healthcare Specialists were therefore co-located at offices in Cardiff to realise the working efficiencies required to meet the delivery timescale.

5.4 Key appraisal activity included:

- Confirming existing data and planning baselines
- Estimating the size of the hospital and its Functional Area
- Health Planning and identification of functional relationships
- Site analysis to identify optimal size design, best fit, building massing and flexibility
- Cost appraisal
- Benefits and risk appraisal
- Review of Optimism Bias
- Economic appraisal using applicable aspects of the 5 Case Model approach

5.5 Our approach in completing each of these is outlined below with the findings for each option set out in Part B of this report and with our overall comparative conclusions set out in Part C of this report.

Use of existing data and Planning Baselines

5.6 Despite general guidance being available in the form of UK HBNs and HTM hospital size, hospital design, layout and capacity invariably follow local preferences over the clinical care models to be adopted.

5.7 Prior to commencement of this revalidation exercise the Future Hospital Project Board had acknowledged the need to be clear over how care would be delivered within the hospital and how it must be able to accommodate the Island's future healthcare needs. Two additional elements of work informed the site validation exercise:

- **Developing a new Acute Service delivery plan** - Gleeds Health Planners undertook work to engage with HSSD clinical and support staff to consider future care alternatives and to draft revised hospital Acute Service Plans. These set out the operational basis for revised care models and inform the spatial requirements needed in any new hospital.
- **Preparing a long term healthcare need forecast** - EY commenced a modelling exercise to analyse current hospital activity and to forecast the growth in demand that would occur over the next 10, 30 and 60 years and the relevant quantum of cost associated with this activity.

5.8 Key findings emerging from the above have been used by Gleeds Health Planners alongside current hospital activity data and generic UK health modelling to inform the spatial planning of each option and are set out in Appendix 9 capacity analysis and Appendix 8 Functional Area Estimate.

5.9 EY activity modelling and health needs forecasts have since confirmed that Gleeds activity interpretation and bed modelling estimates are reasonable at this stage of development.

Hospital size and estimating Functional Area

5.10 The hospital area required to deliver the healthcare models emerging from the above will be different for single or dual site solutions. Dual site solutions will inevitably require a degree of duplication both in terms of plant and amenity spaces and also in terms of health departments in each location to allow healthcare functions to interact correctly when split across locations.

5.11 The brief for 'Option A' being the Dual Site Refined Concept established within the Strategic Outline Case Addendum also involves a blend of new facilities and extensive refurbishment which again will influence the area required.

5.12 Separate Functional Area Estimates [FAE] for single site solutions being Options B, C, D and E and the Option A dual site solution have therefore been developed by adopting UK best practice and UK Department of Health guidance - 'Health Premises Cost Guides [second edition].

5.13 The FAE for all options are included in Appendix 7 and indicate that the area required in all cases for a HPCG derived hospital remains broadly consistent with the estimate of 63,644m² identified within the previous Strategic Outline Case.

5.14 This is notably larger than the area of the current hospital at 38,863m² and has necessitated the Future Hospital Project Board's agreement to the inclusion of the following area reduction strategies:

- The retention of Peter Crill House and Education Facilities at Jersey General with works limited to those necessary to create engineering and services independent from the current hospital;
- Relocation of ancillary services to Five Oaks in support of a broader FM Strategy; and
- The adoption of a 15% blanket reduction in the overall Functional Area against the spatial standards derived from current UK guidance previously implemented within the Strategic Outline Case.

5.15 Whilst adoption of the first two strategies above has been straightforward, the application of a general 15% reduction in spatial standards has proved more difficult. Accurate testing of its achievability has not been possible at this early stage of hospital design and whilst reductions may be readily achievable in some areas they may prove difficult, or to be functionally damaging or clinically unsafe to achieve in others.

5.16 The precise allocation of area reductions will therefore not become clear until full design of the hospital at the preferred site has been completed. Whilst this may eventually change how the area reduction is achieved the Project Board and HSSD representatives have given their overall approval to maintaining the scale of reduction initially proposed within the Strategic Outline Case.

5.17 This is reflected in the FAE's included in Appendix 8, which also set out the analysis completed to date in applying these reductions and summarises the tactical measures and UK Standards derogations required to achieve these (where these are currently known).

5.18 The target total Functional Area Estimates for both single and dual site options are:

Site(s)	Relevant Options	Target Functional Area Estimate
Dual site	**Option A -** (Existing General Hospital and Overdale) – New Build and Refurbishment Option	57,466m²
Single site	**Option B** - Overdale Hospital 100% New Build **Option C** - Jersey General 100% New build **Option D** - Waterfront 100: New build **Option E** - Peoples Park 100% New Build	46,841m²

Table 3: Functional Area Estimates for each option

Calculating Engineering Space

5.19 Given the drive to reduce ancillary area the engineering space required within each option has been derived through three different routes to arrive at an optimal allowance. These are:

- The application of HPCG allowances to the NIA of each hospital function to arrive at the total site area required for engineering and plant;
- Comparative analysis with actual plant spaces provided within a representative group of UK acute hospitals to arrive at a site area requirement; and
- Consideration of the actual plant proposed to arrive at an estimate of the plant space required and the location of key plant areas.

5.20 As a result the engineering and plant area included within each FAE is lower than would be the case had HPCG allowances been fully applied. Based on previous acute hospital experience some plant, e.g. chillers, and air handling plant can be installed at roof level to assist the achievement of FAE allowances.

5.21 In some instances these will require further derogation against UK guidance as set out in the area reduction strategy in Appendix 8.

Health planning and functional relationships between departments

5.22 Achieving the correct functional relationships between hospital departments is critical to building efficiency and, in turn, to effective operational performance.

5.23 Adjacency proposals and functional stacking diagrams have been developed to confirm the preferred relationships within both single and dual site options based upon the Acute Service Plans being developed jointly between Gleeds Health Planners and HSSD lead officers. These have been used to inform the architectural development of site proposals.

5.24 Phasing diagrams have also been developed to show potential stage development and bed number availability in options where this is relevant. Stacking and Massing Proposals are provided in Appendices 10 and 11 respectively and Phasing diagrams are provided in Appendix 14.

Site analysis to identify best fit, massing and flexibility

5.25 The architectural and engineering effectiveness of each site was tested by examining the extent to which the required hospital area and correct departmental relationships could be achieved. In each case this was informed by a study of each site's characteristics and a review of the data and information already available from previous studies.

5.26 The site appraisal findings for each Option are set out later in this report and include:

- Confirmation of the 'red line' boundaries of existing sites and any adjoining sites required to deliver viable hospital solutions;
- Consideration of alternative proposals to develop the optimum proposal for each site option;
- Analysis of engineering services supporting each site and development of service solutions;
- High level review of access arrangements focusing on local impact and the identification of effective emergency traffic solutions;
- High level technical assessment of civil, geotechnical and structural engineering features of the sites, and tidal impact assessment;
- Assessment of town planning issues associated with each site; and
- Development of functional relationship diagrams informing building massing.

5.27 Detailed site appraisal findings are provided in the Appendices. Appendix 3 contains 'red line' boundary plans, Appendix 4 site appraisal diagrams, Appendix 5 details local transport infrastructure for each site and a detailed transport assessment, Appendix 6 outlines Engineering technical notes; and Appendix 7 provides a town planning assessment.

Architectural Design

5.28 The level of design completed during this site options appraisal has been limited to that which can be completed in the time available and to the level of critical detail needed to arrive at a site recommendation. It has included:

- Confirmation of 'As drawn' areas for each site setting out the extent to which each site can support delivery of the Functional Area Estimate (Appendix 8);
- 1:500 Functional layout plans indicating the adjacencies achieved between hospital functions (Appendix 10);
- 1:500 level 2 and 3 dimensional indicative site development plans (Appendix 11);
- Engineering service strategies for each site (Appendix 12);
- Phasing diagrams outlining proposed phased development, where necessary (Appendix 14); and
- Abnormal Schedules indicating the site factors affecting either the deliverability of site solutions, the overall cost of the development or eventual programme (Appendix 15);

5.29 A summary of the data and other reference sources used in arriving at these conclusions is attached as Appendix 28.

Cost Appraisal – General

5.30 The delivery cost of each option has been assessed in capital and revenue terms and modelled using a UK Treasury recommended General Economic Model [GEM]. The outcomes stated as Net Present Values are summarised for each option in Part C of this report and have been derived using the processes set out below.

5.31 A full explanation of the applied capital cost methodology including proposals for inflation indexation and the application of Island Location Factor are included in Appendices 15, 16 and 17.

Specific cost expectations for Option A

5.32 The expectations for Option A are different to those for all other site Options. The brief requires this solution to meet the inflation uplifted budget cost of the Refined Concept Dual Site scheme as set out in the SOC addendum prepared on the 3rd October 2013. This is, subject to the following changes that have occurred since that time:

- Inflation adjustments to reflect the revised timetable for delivery;
- Exclusion of transitional capacity, pending preferred site option confirmation of budget for transitional ward capacity;
- Removal of requirement for Linear Accelerator following separate business case assessment; and
- Introduction of care model changes to dual site concept proposed by Client Departments.

5.33 A high level review completed within the previous Gleeds report indicated that the cost of the uplifted scheme would be £423.4m based upon the above.

5.34 However, a revision of the UK HM Treasury Guidance for Optimism Bias in 2013 indicated that higher levels of Optimism Bias costs should now be included at project planning stages. As such, the pricing of all options in this report has been based on this revised guidance and has resulted in the cost of the option A scheme increasing to £503.8m

Capital Costs

5.35 The individual capital costs for each option have been developed incrementally by:

- Establishing an indexed works cost estimate by using published UK Department of Health guidance - ‘‘Health Premises Cost Guides [second edition];

- Assessing the cost of all specific site conditions associated with each redevelopment option and adding this to the indexed works cost above to arrive at the out-turn cost for each option;
- Calculating any further inflation provisions by using each option's proposed delivery programme to establish a cashflow profile; and
- Establishing an estimate of the Lifecycle cost expectations for each option using BCIS reference data for new build hospitals modelled over a UK Treasury Guidance recommended building planning life of 60 years;

Approach to Lifecycle

5.36 All option lifecycle costs have been derived from industry standard BCIS property operating cost data modelled over a notional 60 year life expectancy. This is consistent with current Business Case guidance, however the following lifecycle planning improvements have been included since the submission of the CR004 report:

- Inclusion of year 60 costs for all options in recognition that a facility developed under any option would expect to have some residual life beyond its 60 year planned life expectancy;
- The remodelling of 'Option A' lifecycle costs on the basis of 'new build' lifecycle cost rates only rather than a blend of 'new build' and 'refurbishment' rates as was the case in CR004. This better reflects the intensive level of refurbishment that would be required within this option.

Approach to off-site infrastructure improvements

5.37 The implementation of any option will require completion of an associated range of option-specific infrastructure improvements. These costs had previously been included within the overall cost of each option as set out within the CR004 report.

5.38 However, recognising that they could be delivered separately, all infrastructure works required outside the main construction site of each option have now been identified separately as 'non-works costs'.

Property Revenue Costs

5.39 To maintain consistency with the modelling techniques used within the previously published SOC [WS Atkins 2013] a variance model has been to identify the revised revenue costs. Here only those costs considered to vary from the operational costs of the existing hospital are identified and included.

5.40 The quantum of future operating cost for each option has been evaluated by EY and included over the agreed periods within the GEM model. This has included the current baseline premises costs and the variances expected within each option.

5.41 Variance in premises management charges for each option have been derived through an assessment of the additional scalable costs expected against the savings anticipated from operating new, efficient buildings. These have been further tested against comparable UK healthcare benchmarks to ensure that they remain within realistic ranges.

5.42 A summary of the confirmed variances for each option are set out within Part B of this report.

5.43 Estimates of annual variance data have been forwarded to EY for inclusion within the GEM model alongside the quantum of baseline cost referred to above.

Acquisition, disposal and Opportunity costs

5.44 Each of the site options being considered will attract a range of acquisition costs or disposal receipts if implemented. The following principles have been developed to maintain consistency in the treatment of all additional site costs within the General Economic Model [GEM]:

- The inclusion of all land and property acquisition costs within the capital expenditure estimate for each option. These costs have been based on professionally acquired valuation advice where available or otherwise States of Jersey advice on Book values;
- The inclusion of all land and property sales receipts and / or any additional development proceeds as income within the GEM Model directly.

5.45 Details of the acquisitions and disposals that relate to each option and the valuations received relating to them are included at Appendix 20.

Transitional costs

5.46 The construction delivery programme for each option includes decant periods that have been reserved to permit healthcare departments relocating into new or alternative facilities.

5.47 The programme time and construction costs relating to each decant period have been included within each option's Capital Cost plan. Calculating the direct HSSD costs for decanting during these periods is not felt to be practical at this stage given the limited design detail that has been developed. These will be identified fully at Outline Business Case stage of the project.

Impact of Inflation

5.48 The impact of inflation both in the case of Option A in the uplift of earlier Strategic Outline Case Addendum costs and, in terms of all options in respect of their programmes going forward, is significant.

5.49 Option A inflation forecasts established in 2013 within the Strategic Outline Case Addendum can now be verified through actual indices. These demonstrate that actual inflation significantly outstripped forecast indices resulting in higher levels of inflation acting on the previous scheme estimated cost than had been forecast.

5.50 Mindful of this, our approach to uplifting and forecasting inflation has followed industry best practice and is consistent with the expectations of UK Treasury Five Case Model guidance.

5.51 Capital costs for each option have been assessed using HPCG guidance based works costs and allowances. These have then been indexed to a 3rd quarter 2015 base date for all options with project commencement inflation being calculated from Q1 2016.

5.52 Allowances for construction cost inflation have then been applied to each option based upon using published inflation forecasts and each option's specific construction phasing programme.

5.53 Published indices have been used in all cases in so far as they are available, with historic trend based assumptions being made for works continuing beyond 2020.

5.54 The full inflation methodology is set out in Appendix 16 and is reflected in the capital cost and cashflow models prepared for each option as contained in Appendix 15.

5.55 Clearly those options with longer programmes will have a greater allowance for inflation as costs will be incurred further into the future.

5.56 These allowances will also be somewhat more speculative the further into the future they are assessed. Given the length of some of the programmes and the anticipated year on year rates of construction price inflation, some of these inflation allowances are therefore large sums.

5.57 A summary of the indexation process applied to each element of cost is shown in the table below:

Cost Element	Indexation process applied
Works Costs	HPCG costs updated to time of implementation of the work on site
Fees	PUBSEC index applied up to start on site date. Thereafter 3.5%pa.
Non Works Costs	HPCG costs updated to time of implementation of the work on site
Equipment	PUBSEC index applied up to start on site date. Thereafter 3.5% pa.
Contingencies	HPCG costs updated to time of implementation of the work on site

Table 4: Indexation processes

Location Factor

5.58 The HPCG capital cost allowances are based on standardised UK construction costs. However construction costs will vary in different locations given local circumstances (i.e. buoyancy of local markets, local labour supply and employment costs, logistics and transport costs etc.)

5.59 The BCIS therefore recommend that standard allowances are adjusted by a 'Location Factor' to reflect these local costs (or savings).

5.60 Appendix 17 sets out the methodology we have used for determining the Location Factor for each of the site options under review.

5.61 Our assessment is based on a mixture of BCIS data, information from on-island reports and our own research.

5.62 This will require further review as the design and procurement of the preferred option progresses as it will be dependent on the types of material and construction methods selected.

5.63 However at this stage the following allowances have been applied:

Option	Proposed Location Factor
Option A	25%
Option B	24%
Option C	25%
Option D	24%
Option E	24%

Table 5: Location Factor

5.64 The differences between these allowances largely reflect the increased opportunity for 'off island' manufacture within new-build Options B, D and E and the associated reduction in exposure to on island labour cost premiums.

Enquiries and consultations

5.65 A number of formal enquires have been completed to both consult over the options being considered and to gather technical and other information required to support the development of our proposals.

5.66 These are set out below with the responses received included in Appendix 29.

Consulted Party	Date	Enquiry detail
States of Jersey Planning Officer	2nr meetings – 23.01.15 and 26.02.15 Formal response dated 26.03.15	Consultation and discussions in relation to site options, considerations and constraints
	Meeting – 04.08.15 regarding long list review of park sites	Consultation and discussions in relation to site options, considerations and constraints
The Parish of St Helier	25.02.15	Discuss and review appropriate matters of interest
	Meeting – 06.08.15 regarding long list review of park sites	Discuss and review appropriate matters of interest
Jersey Water	Ongoing following initial enquiry made 26.06.14	Water pressure, connection and service information
	Ongoing following further enquiry made 07.08.15, regarding park sites	Water pressure, connection and service information
Jersey Electricity	Ongoing following initial enquiry made 26.06.14	Existing utilities supply and future options
	Ongoing following further enquiry made 07.08.15, regarding park sites	Existing utilities supply and future options
Transport and Technical Services Department (Transport and Drainage Authority)	Transport - Initial enquiry made by telephone 12.08.14 Formal response to traffic proposal 16.04.15	Enquiries in relation to traffic data, blue light access and junction improvement
	Formal response to traffic proposal 23.09.15	Enquiries in relation to traffic data, blue light access and junction improvement
Transport and Technical Services Department (Transport and Drainage Authority)	Initial enquiry made by telephone 28.01.15	Enquiries in relation to drainage
	Ongoing following further enquiry made by email dated 10.08.15 regarding park sites	Enquiries in relation to drainage
Jersey Fire and Rescue Services	Meeting 18.02.15	Consultation and discussions in relation to site options, considerations and constraints

	Further meeting 11.08.15 regarding park sites	Consultation and discussions in relation to site options, considerations and constraints
Jersey Police	N/A	No contact made. Principles of 'Secure by Design' adopted.
Jersey Ambulance Service	13.04.15	Blue light access
Health and Safety inspectorate	N/A	No contact made. Too early to discuss without more scheme information
BNP Paribas	Report issued 23.03.15	Valuation advice
	Further report issued including People's Park detail	Valuation advice
Jersey Gas	Ongoing following initial meeting held 15.07.14	Existing utilities supply and future options
	Ongoing following further enquiry regarding park site 07.08.15	Existing utilities supply and future options
ICT Provider (JT Global)	30.01.15	Enquiries in relation to telecom services
	Further enquiry regarding park sites dated 07.08.15	Enquiries in relation to telecom services
States of Jersey Future Hospital Project Team – Building Services	Initial enquiry made 14.01.15	Enquiries in relation to utilities (electric, oil, gas and water)
Jersey Development Company	Initial meeting 19.01.15	Consultation and discussions in relation to site development at Option D Waterfront

Table 6: Schedule of Enquiries

Benefit and Risk Appraisal approach

5.67 To maintain consistency with previous studies the benefits and risks associated with each option were assessed against the same risk and benefit criteria as were used in developing the Economic Case within the Strategic Outline Case [SOC WS Atkins May 2013].These are set out in Appendix 22.

5.68 It is acknowledged that the range of risks and benefits criteria is broad at this stage and quite correctly reflects the significance of site selection on the performance of the Future Hospital.

5.69 This has been mitigated through the use of criteria weighting developed in conjunction with the States of Jersey project team and which secured Project Board approval on 17th March 2015, included within Appendix 22.

5.70 Option evaluation was completed through a formal workshops held on the 26th March 2015 and 22nd September 2015. In each case the workshops were facilitated by Gleeds as the Lead Advisor.

5.71 The evaluation group was constituted independently to those responsible for the development of the risk and benefits model so as to draw on a wider blend of expertise and on-island familiarity and also to avoid any potential bias possible through foreknowledge of model weightings.

5.72 The group included representatives of the Gleeds technical team, on-island advisors, and HSSD representatives.

5.73 In advance of any scoring, the Evaluation Group received a presentation of the proposals for each site along with an explanation of the underlying principles, opportunities and challenges encountered which ensured that they were clear over the relative merits of each site option.

5.74 The Evaluation Groups findings have been used to establish:

- The relative benefit and risk adjusted scores for each option and overall option rankings in Part C of this report;
- A ratio of the weighted findings compared with the NPV of each option as emerging from the GEM model; and
- An overall ranking of the options in terms of risk, benefit and NPV.

5.75 Further levels of sensitivity analysis were completed by the Project's Financial Advisor EY to assess the reliability of our findings. These are included in Part C of this report.

Residual risks

5.76 The risks associated with each option have, where possible, either been mitigated within each design solution or been addressed through provisions within each option's cost plans or programmes. Any remaining unmitigated risk including that emerging from the benefits and risk appraisal process has been captured within residual Risk Registers for each option. These are set out in Appendix 23.

5.77 It is not unusual for a broad range of risks to exist at this early stage of project development given the expectation that these would be reduced or removed or otherwise mitigated through later stages

of design development. As such, residual risk at this stage has been managed through the application of Optimism Bias in accordance with the UK Treasury Green Book Guidance.

Optimism Bias

5.78 The degree of Optimism Bias applied to each option has been calculated using the Mott Macdonald Construction Optimism Bias model and reflects UK HM Treasury Supplementary Guidance.

5.79 The allowance reflects the technical team's judgement of the residual risk that remains unmitigated within each option. In each case, risk judgements have followed from professional expertise / sector experience given the limited design completed at this stage.

5.80 The estimated allowance will continue to be revised and likely reduced as risk is mitigated through more detailed planning within later stages of the project.

5.81 The full Optimism Bias models for each option are included in Appendix 18 with the findings summarised within the review of each option in Part B of this report.

5.82 Optimism Bias within the SOC and Refined Dual Site Concept Addendum was calculated on earlier principles than those referred to above. As such, to maintain consistency Optimism Bias and contingency sums for Option A have been retained at the level included in the SOC.

5.83 UK Treasury Guidance acknowledges that Optimism Bias will be significant within the early 'strategic planning' stages of projects and that it will reduce as project risk is mitigated through detailed design. As such, we would expect these levels of Optimism Bias to reduce as the project is developed.

Construction programming and general assumptions

5.84 The construction methods and sequences required to deliver the proposed solutions within each option have been informed by extensive UK healthcare and on-island construction expertise. This has ensured that in addition to recognising the 10 year time constraint imposed by the Project Board programmes reflect:

- prudent time periods being reserved for key programme activities where specific States of Jersey approval processes must be observed;
- adequate periods being included for planning determination following consultation with States of Jersey Planning Officers;
- Pragmatic decant periods and, in so far as is possible at this stage, a recognition of the primacy of the hospitals clinical operation over decanting needs; and

- Time allowances for design, procurement, construction and occupation that are felt to be realistic and reflect benchmark construction output data from comparable projects.

5.85 As a consequence of the above, the overall delivery programmes for each option set out in Appendix 13 are considered to be realistic and have been used to inform each option's construction cashflow, inflation provisions and overall delivery cost.

5.86 These assume a site selection decision is taken by Ministers in early 2016 so as to allow a three month period for completion of 'Deliverable 3 - Project Brief' by 30th April 2016. This will allow the preferred site Feasibility Studies to be completed as previously planned.

Project Assurance

5.87 A specific EY Assurance team has been appointed by the Project Board to validate the evaluation methodology, process and outcome proposed by the Lead Advisor's Technical Team. Assurance actions to date have been based on the scrutiny of financial models and technical method statements and their comparison with UK best practice and Treasury Business Case guidance.

5.88 EY Assurance have used a traffic light system to track their enquiries and to indicate where satisfactory findings have been confirmed.

5.89 Transcripts of EY assurance enquiry logs are attached as Appendix 24 together with a final copy of their Assurance Report once complete.

Redevelopment Opportunities

5.90 The table below sets out the sites that would be released for either previously planned or new redevelopment. In the case of Overdale and Jersey General Hospital, provisional sketch schemes have been developed to support the calculation of potential receipts and are included in Appendix 21.

Site	Drawing Reference	Scheme summary
Jersey General Hospital	JGH_Disposal Option_GF JGH_Disposal Option_Upper Floors	513 units (138 single, 263 two bedroom & 112 three bedroom units) with associated parking
Overdale	Overdale Hospital Site_Possible Disposal	362 units (185 single, 101 two bedroom and 76 three bedroom units) with associated parking

	Option_Residential Development	
Waterfront	N/A	Site remains available for use as in current Masterplan for 386 residential and 90 commercial units
People's Park	N/A	The assumption has been that the potential development is limited to development of underground car parking.

Table 7: Redevelopment opportunities

5.91 The Jersey General scheme includes increased amenity space to indicate how Jardins de la Mer would be replaced in the event of its loss were Option D or option E to be selected.

5.92 These options have been shared with States of Jersey Planning Officers who noted that densities were generally conservative and could potentially be increased.

6 Part B – The Developed Options

6.1 The prospective benefits, risks and overall viability of developing a new hospital at each of the proposed sites has been tested following the general methodology set out in Part A of this report.

6.2 In each case a common standard of review has been adopted other than in those areas where broader or more detailed analysis has been necessitated by site circumstances. In each case, a review of alternative site acquisitions was undertaken to identify the optimal footprint for acquisition. The variants considered are set out in Part D and Appendix 32.

6.3 To avoid unnecessary cost or time, data has been drawn from a number of existing sources where it remains relevant or where it can readily be updated to reflect current thinking. This includes the use of data from the Strategic Outline Case and refined Concept Addendum prepared in 2013 and other sources related to these documents. A full schedule of data sources is set out in Appendix 28 – 'Data Book'.

6.4 Several of the proposed sites form part of more than one option. As such, to avoid unhelpful repetition, an overview of each site is included in this section with only the detail of its specific use within each solution being included later.

6.5 To assist with this, the key drawings relating to each site have been included in Appendices 3 ('Red Line' Boundary) and 4 (Site Appraisal) and the specific boundary 'red line' drawings relating to this section are set out in the table below:

Site	Drawing Reference	Detail
Jersey General Hospital	1. Proposed 'Dual-Site' Option – Site Boundary / Plot Area Analysis 2. Jersey General Hospital – Site Boundary	1. Site boundary and additional properties considered 2. Site boundary and additional properties considered
Overdale	1. Proposed 'Dual-Site' Option – Site Boundary / Plot Area Analysis 2. Overdale site boundary	1. Site boundary 2. Site boundary and additional properties considered
Waterfront	Waterfront site boundary	Site boundary, inclusive of acquisitions required
People's Park	People's Park Site Boundary	Site boundary, inclusive of protected covenanted zone

Table 8: Schedule of 'red line' boundary plans

Site Overview – Jersey General Hospital

6.6 As the only acute facility on the island Jersey General Hospital is located on a heavily developed town centre site of some 1.85 ha. Like many of the hospitals in the UK it has inadvertently suffered over time from piecemeal redevelopment and refurbishment which now hampers its function and effectiveness.

6.7 The site has been developed over time to eight storeys to provide the current level of accommodation and offers only limited scope to increase vertically. This site also includes listed accommodation which will need to be reflected sensitively in any redevelopment proposal.

6.8 The site has significant basement infrastructure and associated engineering services which are in poor condition largely as a consequence of their age.

6.9 The site has limited amenity space due largely to its incremental development over time. As such, its contribution in architectural terms to the town centre is limited.

6.10 The site is landlocked by other town centre developments, residential accommodation and roadways making any lateral expansion of the site extremely difficult. The hospital also has a number of 'listed buildings' with the Granite Block being the more significant.

6.11 Being located within the town centre Jersey General Hospital benefits from well-developed access provision for all modes of transport. The surrounding road network is subject to one-way traffic flow which is helpful in managing hospital access and in providing a good level of resilience in the event that one route becomes blocked. However, access for heavy goods vehicle deliveries is difficult.

6.12 Gloucester Street and The Parade have key pedestrian interfaces and routes into the town centre and the waterfront area.

6.13 The site is well placed in relation to Liberation Bus Station which functions as the main hub for all island-wide services. Bus stops are also currently available locally on The Parade and Gloucester Street.

Sites adjoining Jersey General Hospital

6.14 A number of the options that consider the redevelopment of Jersey General Hospital will also require the acquisition of adjoining properties to create sufficient space for the new hospital. The properties required will vary from one option to another and will be drawn from the following:

- 2 Edward Place – this is a Victorian terraced property that is currently subdivided into mixed commercial and residential use.

- 4 Edward Place – This property is similar to 2 Edward Place above but slightly larger in scale. Collectively both properties occupy a corner site between Kensington Place and The Parade.
- Stafford and Revere Hotels – These are two separate hotel blocks located on Kensington Place that collectively occupy a site area of 0.67Ha and form a corner site between Newgate Street and Kensington Place.

6.15 Acquiring all of the above properties would allow the current Jersey General Hospital site to be extended fully to Kensington Place

6.16 Further options to increase the size of the Jersey General Hospital site were also considered including the acquisition of all properties up to Lewis Street. Whilst this introduced a further rectangular extension to the site, spatial planning confirmed that it did not deliver any significant benefit and was not pursued further.

Site Overview – Overdale

6.17 Overdale is currently used by HSSD to provide community and rehabilitation services for adults and older adults including residential and respite facilities.

6.18 It consists of a mix of relatively new and older buildings ranging in scale but predominantly two to three storeys in height. The existing Westmount Centre, Poplars and William Knott buildings are reasonable quality and will be retained in any proposal with the remainder of the estate being available for demolition as required.

6.19 Overdale Hospital is sited on the crest of the southern escarpment slopes of the St Helier basin. Accessed by Westmount Road (a secondary road) the site sits above the town of St Helier and is part of a less developed and much leafier suburb of the town.

6.20 The site is characterised by a large number of mature trees and some particular specimens that have been identified as being of high quality and worthy of protection and retention. A tree survey will need to be undertaken to determine any 'tree protection zones / tree preservation and protection measures'. The site is also characterised by its topography in that it slopes away quickly toward its western and south-western boundaries with significant slopes evident at the head of Le Val André to the north-west.

6.21 The adjoining neighbourhood is mainly residential. Thorpe Cottage lies along the eastern edge of the site and projects heavily into its curtilage. The Crematorium is located immediately to the north of the site and is adjacent to the Jersey Waterworks Company Headquarters, which includes one of

the storage reservoirs for St Helier. Old Mont a L'Abbé Cemetery lays to the north-east on the eastern side of Westmount Road.

6.22 The woodland valley slopes of Le Val André, owned by the States of Jersey, and Westmount Park, an informal public park, lie to the west of the site. They slope down to the bottom of the escarpment slopes above St Aubin's Road.

Current Access and transportation

6.23 Overdale is detached from St. Helier, which increases the distances over which many journeys to and from the hospital will need to be undertaken. This detachment also reduces the attractiveness of walking and cycling as forms of travel and is likely to increase car dependency.

6.24 Westmount Road currently provides the most direct route of approach from central St. Helier. However, the steep gradient and tortuous nature of this route already make it unattractive to many pedestrians and cyclists.

6.25 The existing footway provision along Westmount Road is largely single-sided and discontinuous, requiring pedestrians to cross the road on at least two occasions. The local topography and disjointed nature of the footway network provides further disincentives to walking and cycling. To the north of the site, the gradient of Westmount Road is better suited to walking and cycling journeys from the local area.

6.26 The Queens Road corridor and other roads connecting to the hospital site are already known to experience congestion at peak periods.

6.27 The site is currently served by one bus service (No. 19) that runs southbound along Westmount Road on an hourly basis to Liberation Bus Station. The service does not operate during evening periods and Sundays.

6.28 An access road serving a number of detached residential properties lies along the southern boundary of the site. Other residential properties to the south include a hotel that has been converted to residential apartments.

Sites adjoining Overdale

6.29 The tension between a difficult site shape, topography and planning policy present a significant challenge to achieving an efficient hospital design at Overdale. Some assistance will be gained through acquisition of the adjoining properties detailed below:

- Mulcaster House – this is a mixed use site of some 1.34 acres in the northern boundary of the existing Overdale site. It is accessed via a private lane from Westmount road and is currently the administrative headquarters of Jersey Water.
- Field 1551 - is located on the western side of Westmount Road opposite the existing Overdale site. This is an irregular shaped parcel of undeveloped agricultural land of circa 3.3 acre. The site slopes strongly from west to east with part of the eastern boundary overlooking the steep cliff face into Westmount quarry. The site is accessed directly from Westmount Road.

Site Overview – Waterfront

6.30 The waterfront site is some 2.78 ha located to the west of La Route de La Liberation and adjacent to the existing 'Radisson Blu' hotel. The site is comprised of several undeveloped brownfield parcels of land being separately identifiable as:

- Westwater
- Zephyrus
- Car parking and Les Jardins de la Mer.

6.31 The combined site overlooks St Aubin's Bay to the west and has frontage along both the Esplanade and Route De La Liberation to the north and east. The western boundary of the site runs parallel to the existing sea wall and pedestrian promenade. The south west corner is adjoined by the existing Radisson Blu Hotel and car park. The eastern boundary of the site can be accessed via Rue De L'Etau and is adjoined by the existing Cine World facility.

6.32 The site opposite (situated to the south east) bounded by the Esplanade, Route De La Liberation and Castle Street is the proposed location for the Jersey International Finance Centre and an existing public amenity space, Jardins de la Mer is located within the north western corner of the site.

6.33 The existing A1 dual carriageway currently provides the opportunity to achieve direct connectivity to the island road network, but at the same time constrains direct connectivity from the eastbound carriageway as well as acting as a barrier to direct movement by cyclist / pedestrians.

6.34 An existing underpass is located at the Esplanade car park, connecting either side of the A1.

6.35 The site is well placed in relation to Liberation Bus Station which functions as the main hub for all island-wide services.

6.36 There are minimal electrical / communications / water / gas services located within the site boundary. However, there are existing water, communications and electrical services routed along La Route de la Liberation / Esplanade and gas provisions routed along Rue de L'Etau.

6.37 Initial flood analysis indicates that the site would not be compromised by tidal foods up to 9m (1:200 year risk). However, access roads to the site may require some protection as there is historic evidence of them being affected by tidal overtopping waters.

6.38 The site is currently subject to master-planning for residential development and this would need to be revised to support a hospital development. In addition some temporary parking permitted on the site in support of the Jersey Finance Centre would need to be re-provided if the site were to be used.

Site Overview – People's Park

6.39 Peoples Park is a public amenity space on the north western edge of the town centre. The gardens include a variety of mature tree specimens predominantly to the northern slope / escarpment, ornamental planting and a playground adjacent to Westmount. The site is designated as Protected Open Space in the Revised Island Plan 2011.

6.40 At some 2.2 ha the site is largely flat lying some 15m above sea level but with the far north-western part of the site rising toward the escarpment. A benched slope has been formed here with the site/escarpment then rising to over 35m.

6.41 Rock exposures to the west of the site indicate potential for bedrock near the surface on the higher ground in the west towards the back of the site. Ground conditions are anticipated to comprise of up to 8m of superficial deposits underlain by Volcanic Andesite Formation.

6.42 The site is bounded by good quality road infrastructure with St Aubins Road to the east and by Westmount Road to the east / north east. Victoria Park and Peirson Road lie south and adjacent to St Aubins Road providing a generous set back distance between the site and the existing properties. Further properties on Westmount Road rise up from St Aubins Road to various heights from three to seven domestic storeys.

6.43 The site has good access to the wider island road network including A1, A2, A8 and A9. Road links to the south are considered to be marginally easier than those from the north and some junction highway improvement may prove necessary. The site is within the walking catchment area of many residences and the commercial business district. St Helier is the main bus terminus for island services.

6.44 Further site screening is provided by a tree lined avenue abutting St Aubins Road which is understood to be protected by further planning covenants. There is also understood to be covenant to the north side of the park site.

6.45 The site is well served with water, electricity and foul drainage systems having adequate capacity to meet the hospital's needs. However, some existing surface water attenuation tanks may need to be replaced with alternative drainage as part of any development.

7 Option A - Dual Site, Mixed New Build and Refurbishment

The proposed solution

7.1 The following drawing schedule should be consulted alongside this proposal:

Purpose	Location
Site Red Line boundary drawings - Jersey General Hospital Site Boundary Drawing	Appendix 3
Site Red Line boundary drawings - Overdale Site Boundary Drawing	Appendix 3
Site analysis drawings - JGH Site Analysis	Appendix 4
Site analysis drawings - Overdale Site Analysis	Appendix 4
Site Layout drawings	Appendices 10 and 11

Table 9: Option A drawings

7.2 The proposed solution broadly reflects the Dual Site Refined Concept scheme as initially set out within the SOC Addendum [WS Atkins October 2013]. This will involve:

- Existing buildings at Overdale will be demolished to enable the relocation of Ambulatory Care services from Jersey General to new buildings constructed opposite the existing Westmount Centre.
- The acquisition of existing properties not in the ownership of HSSD off Kensington Place and The Parade to support functional remodelling and refurbishment of Jersey General Hospital
- Re-use or refurbishment of extensive areas within the existing and listed Granite Building.
- The retention of Peter Crill House with little or no change to existing functions or departments within it.
- Potentially minimising heavy goods access to the reconfigured Jersey General Hospital by locating Laundry, Catering, Medical Equipment Library (with incorporated Electro Biomedical Engineering), FM Workshops, FM Supplies/ Stores and CSSD at the Five Oaks site. However, for the purposes of this exercise only the catering facility is modelled to be relocated to Five Oaks.

Acute Service at the General Hospital

7.3 The proposed site strategy has been developed to effectively deliver the SOC Refined Dual Site Concept in the context of an emerging Acute Services Strategy that reflects changing preferences over clinical models of care. The pressure to meet the indexed cost envelope of the SOC Refined Concept scheme has also been managed as far as is practically possible through the extensive re-use of existing accommodation.

Figure 1: Option A - JGH Proposed Perspective View

7.4 The sequencing of the implementation works has also been a key factor in the strategy given the need to ensure key hospital services can be maintained throughout all phases of development.

7.5 The site strategy follows the principles of those applied in the SOC and involves the retention and refurbishment of the following existing buildings on the site:

- Granite Block, 1980's block, Gwyneth Huelin Block (in part).
- Peter Crill House is retained in its current form and use and the 1960's Block is left as a vacant building, all as suggested in the SOC.
- Demolition of parts of Gwyneth Huelin Block (either side of the retained day theatres element) is also proposed along with the Lab Block.
- The existing boiler house is proposed to be retained, as the SOC with key services components to be replaced as required.

7.6 The site strategy takes advantage of the possibility to acquire the corner plot facing Elizabeth Place (retaining the existing 'St Elmo' block, as suggested in the SOC). This allows the first phase of development to be initiated: an eight storey extension of the existing 1980's block, providing extended ward accommodation and space at the ground floor for re-located mortuary and a new FM hub. This first phase extension also provides decant space for following development phases.

7.7 The strategy also assumes that construction of the ambulatory care centre at Overdale (referred to above) will be complete and operational, allowing the decanting of services from Gwyneth Huelin and Laboratory block prior to any redevelopment at Jersey General Hospital.

7.8 Our proposed sequence of development suggests a refurbishment of the ground floor 1980's block to provide new pathology facilities. Upon completion of this and decant of the existing pathology department, demolition of the lab block and Gwyneth Huelin can commence, creating space for the construction of new facilities including emergency, radiology and Clinical Decisions Unit at ground floor, new theatres and critical care at first floor and new inpatient wards on the remaining floors.

7.9 The proposals, as mentioned above, respond as required to the proposals developed in the SOC with the following exceptions where the proposals have also attempted to include the relevant aspects of the Acute Services Strategy:

- Pathology is proposed to be located at Overdale in the SOC but is proposed as part of the Jersey General Hospital proposals in order to reflect the Acute Services Strategy.
- A Clinical Decisions Unit is proposed as part of the response to the Acute Services Strategy.

7.10 The proposed massing is consistent with the proposals developed for the SOC in terms of the number of storeys throughout the development. There are no elements which are intended to be taller than the existing buildings on the site.

7.11 An alternative arrangement to the cruciform inpatient ward block proposed in the SOC on the site of the lab block is suggested as a means to improve internal planning and the size of and aspect of courtyards.

Ambulatory care at Overdale site

7.12 The strategy for the placement of the proposed building and the arrangement of functional content sees a two storey building located to the west of the existing retained Westmount Centre. The building footprint broadly follows the existing spread of development with its shape having been conceived to allow good adjacencies as well as the retention of the identified high quality tree specimens. A new car-park is proposed to the north west of the site, accessed via the existing road running between Thorpe Cottage and the crematorium. The car-park provides approximately 105 spaces. A small energy centre and FM hub is proposed to the north of the site.

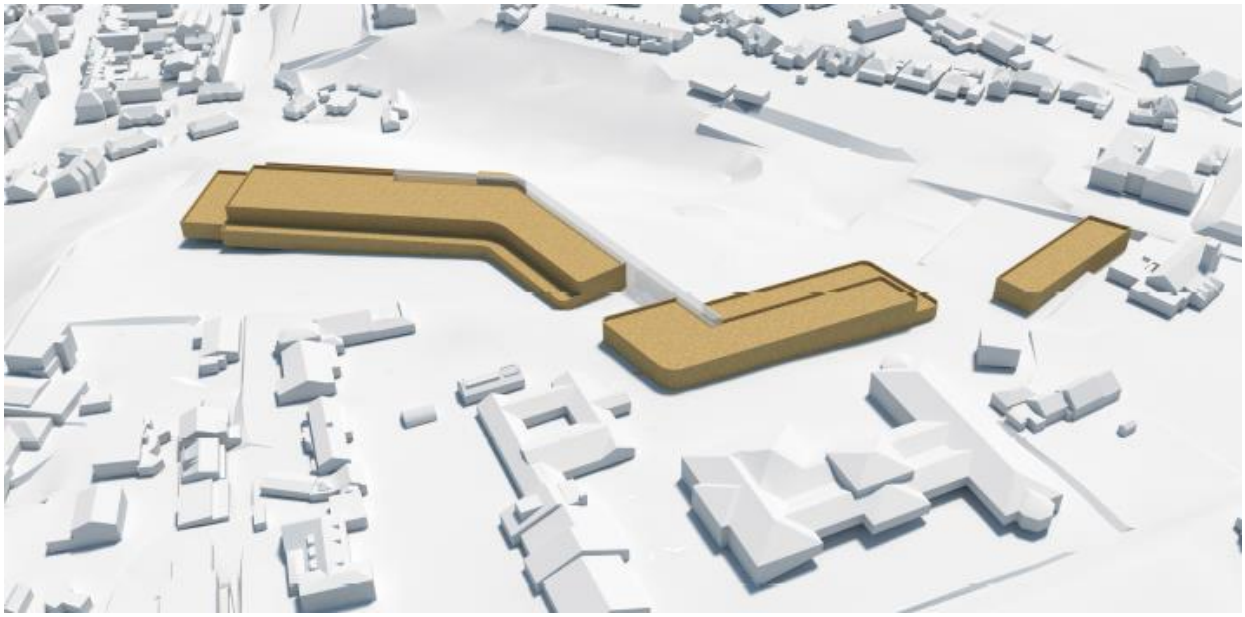

Figure 2: Option A Overdale Proposed Perspective View

7.13 The building is arranged around a central entrance zone, approached either from the new car-park and drop-off to the north-west, or from the existing drop-off for the Westmount Centre. The proposed entrance area faces a south facing enclosed garden area, which also provides secure external amenity space for the paediatric outpatient clinic. General outpatient clinics are proposed at ground floor level with views to the south-western landscape features and Le Val Andre. Radiology is co-located with the OPD clinic area. Paediatric and private outpatients are located off the proposed main entrance zone with access to the secure garden area mentioned above and a southerly aspect. The upper floor contains renal dialysis and chemotherapy areas plus obstetrics and gynaecology clinics.

7.14 It is noted that the brief for Change Order 4 suggests that careful consideration of the SOC proposals be undertaken in order to ensure the proposals are deliverable within the budget (accepting that the proposals should also take account of the Acute Service Strategy). In comparing these proposals to those included in the SOC several differences are noted:

- The Acute Services Strategy proposes that pathology services shall be provided at Jersey General Hospital not at Overdale, as indicated in the SOC.
- There are no proposals for new Linac facilities in the Acute Services Strategy.

- Education facilities are not proposed within the ambulatory care facilities, as SOC, as they are provided in the retained Peter Crill block at Jersey General Hospital.
- There are no proposals to locate Social Services at Overdale in the Acute Services Strategy and it is not proposed to demolish Thorpe Cottage, as suggested in the SOC.

7.15 The proposed massing sees a two storey narrow-plan block, arranged to minimise its impact on existing site features and trees and neighbouring properties. The arrangement of the proposed south-western wing allows space to extend the facility to the east should future expansion be necessary.

Revised access to Jersey General

7.16 The configuration of acute health care provision at Jersey General will benefit from better road connectivity to the A1/A2 primary routes maintained for blue light vehicles and relative proximity of the hospital to the town centre.

7.17 The conversion of some roads to two-way operation is proposed to achieve a greater degree of resilience in the event of a road becoming blocked. This also provides benefits for potential bus route provision and a proposed barrier/bollard controlled section has been included to allow controlled access for increased bus route and blue light movement around the hospital perimeter.

7.18 The proposed access will therefore be:

- Primary emergency and 'blue' light access to be via Gloucester Street and Newgate Street.
- Proposal to change Newgate Street to two way traffic to provide emergency vehicle access and egress in both directions.
- Fire tender access will be directly onto site via Gloucester Street and Newgate Street (see minutes of meeting held on 18.02.15 with representatives from SOJ Fire Service).
- Public / Visitor drop-off zone will be on-site adjacent to The Granite Building.

7.19 The split site arrangement creates an element of travel demand between the two locations. This could be most appropriately accommodated through the provision of a direct interconnecting bus service. There could be scope to adapt a public service to serve this purpose, as an alternative to providing a bespoke shuttle bus which may attract low levels of demand at certain times of day.

Revised access to Overdale

7.20 Access routes to the Overdale Hospital site will remain unaltered with on-site roadway reconfiguration to afford access to the new Ambulatory care buildings. The following works are

therefore directed at improving existing arrangements in terms of highway safety, recognising that there are practical limitations associated with what extent of physical improvements can be achieved.

- Controlled crossing facilities to improve pedestrian access given the existing single sided footway approaches.
- Bus service provision will need to be upgraded, both in terms of coverage and frequency if public transport is to provide a viable travel option for a greater proportion of hospital journeys. We feel that any upgrade could be concentrated on the frequency and duration over which services to/from Liberation Bus Station in St. Helier operate, in view of the opportunities that already exist to inter-connect with other island-wide services. The additional journey time associated with interchanging between connecting services may deter some hospital users from using the bus in preference to the car. A more desirable scenario is to reconfigure the existing bus network in such a way that affords the hospital direct access to a more extensive range of services. This would achieve a level of service befitting a modern hospital and requires further dialogue with TTS, the Parishes and Liberty Bus. Any decision making would need to be mindful of the physical limitations of the local road network and potential implications on existing service passengers.
- Completion of a series of road and junction improvements as an early indication of works that could be undertaken to optimise the network for access to both sites as is practicable within the existing constraints of the network.

7.21 These arrangements were discussed with the States of Jersey Transport Authority and the Parish of St Helier's Deputy Controller of Technical and Environmental Services on 25.02.15 and both expressed concern about the transport impacts. Further consultation will be required with the Transport Authority, the Constable, the Roads Committee and the Parish of St Helier Assembly were this option to be considered preferred before it could be considered acceptable.

7.22 Full details are provided in Appendix 5.

Location / junction	Description of the works	Benefits secured
St John's Road / Queens Road junction	Upgrade to traffic signalled arrangements	Provide dedicated opportunities for turning traffic to manoeuvre
Tower Road / St John's Road junction	Approach widening and/or conversion to traffic signals	Create additional queuing capacity
Westmount Road / Tower Road	Re-configuration of priority arrangement	Afford priority to movement between Westmount Road and the eastern section of Tower Road and incorporate improved pedestrian facilities

Westmount Road / Peirson Road junction	Upgrade to traffic signalled arrangements	Provide dedicated opportunities for turning traffic to manoeuvre
Rouge Boullion roundabout	Enlargement and widening	Improve traffic flow

Table 10: Overdale junction improvements

Parking arrangements

7.23 The initial parking provision outlined below has been developed to meet the expectations of the States of Jersey Planning and Environment Parking Guidelines Policy Note: 3 [September 1988].

- Within the built up area (Area 2); 1 space for each doctor, surgeon, consultant and where appropriate essential medical personnel/ 1 space per 3 ancillary staff and 1 space per 3 beds.
- Out with the built up area (Area 3); 1 space for each doctor, surgeon, consultant and where appropriate essential medical personnel/ 1 space per 2 ancillary staff/ 1 space per 2 beds.
- 48 short stay spaces adjacent to Peter Crill House and the main entrance.
- 13 spaces in existing basement and 5 spaces adjacent to ramp down.
- Remainder of required spaces, circa 470 spaces based on above mentioned guidance to be provided via existing Patriotic Street multi-storey car park. This is based on the current arrangement serving the General Hospital site where the lower basement of Patriotic Street car park provides dedicated parking for visitors and those with appointments.

7.24 In the event that this option is selected these would be refined following completion of a full transportation study and the development of a complementary Green Travel plan to minimise reliance on private transportation.

Engineering Services

7.25 Engineering services at both Jersey General and Overdale will be completely renewed to include:

- New/upgraded incoming services for electricity, water, gas and oil will be provided to accommodate the increased building load. Gas and oil will be provided to allow dual fuel resilience for heating boilers.
- All existing systems will be replaced with new including boilers, pipework, electrical infrastructure, medical gas equipment, chillers, air conditioning plant. However, spatial constraints within existing plant rooms will reduce the level of resilience possible in some systems by restricting the capacity and quantity of new equipment provided for all systems including heating and electricity with ICT and water.

7.26 A separate study has been undertaken to investigate the most appropriate method of heating the hospital, taking into account fuel source and heat generation method. This report is considering oil,

gas and electricity as fuel sources. If the outcome of the study is that electricity is the chosen fuel source, the space required for transformers, generators and HV/LV switchgear will increase.

Geotechnical proposals at the General Hospital

7.27 The new build proposals vary in height between two to five storeys generally with a taller seven storey tower to the East of the site. New basement areas have not been included, but the existing basement will be partially retained.

7.28 Given the existing ground conditions, it will be necessary to provide piled foundations and potentially a suspended ground floor slab.

7.29 Piles will be around 15-20m in depth with varying rock socket depths (4-7m) dependent on the height of the respective building. There is the potential to consider re-use of the existing piles in some areas which would need to be reviewed for individual areas against the requirements of the new buildings.

7.30 As there is no increase in surface water run-off any new buildings on the site will be able to connect to the existing dedicated sewer in The Parade via existing on-site drainage network.

7.31 Based on the high level review undertaken, it is not expected that the level of overtopping sea water to the south of the site will be significant. The entrances and basement provision to the affected area of the site have therefore been appropriately considered to mitigate the risk of water ingress.

Geotechnical proposals at Overdale

7.32 The new ambulatory care building is no greater than two storeys in height and does not include a basement. A review of the existing ground conditions suggests that a ground bearing slab may be suitable. Piles will be around 3-5m in depth with a 2m deep rock socket.

7.33 The site slopes generally from East to West and the main entrance will be at or around the existing site level, the ground slab of the building will therefore be elevated above ground level by approximately 3m at the West edge of the building.

7.34 This will be achieved either through a retaining wall and compacted fill, or as a suspended slab on columns with cladding to create an undercroft.

7.35 It should be noted that, with bedrock close to the existing ground surface, the costs of excavation on the site for foundations and drainage can be expected to be higher than normal.

7.36 Management and treatment of the invasive Japanese Knotweed plant will be required.

Achieved Hospital Sizes

7.37 The Dual Site Functional Area Estimate V.18 has formed the basis of this proposed solution. Spatial plans have been developed to reflect the difficult site topography and, as a consequence, have resulted in the need for increased communication space to deliver the functionality required.

7.38 The following spatial results have been achieved. A full breakdown of the as drawn area by function has been included in Appendix 8.

Site	FAE target area	Actual Drawn Area	+/-
Overdale Hospital	57,446m^2 combined	10,620m^2	3,963m^2
Jersey General		50,789m^2	

Table 11: Option A spatial planning outcomes

Cost Appraisal

Capital

7.39 The capital cost of this option has been prepared following the process outlined in part A of this report. It has been adversely impacted by a number of key issues associated with the site and the dual site configuration. As a result:

- The achieved 'as drawn' area is larger than the Functional Area Estimate contained in Appendix 8.
- Due to the inherent difficulty of working on a live hospital site and the need to complete works at Overdale before commencing work at Jersey general the construction programme contained in Appendix 12 is longer than 10 years.
- The multiple decant events required to release areas for redevelopment have a significant impact both on the programme and hospital service disruption.

Cost element	Cost £000
Works Costs	£206,746
Fees	£33,079
Off-site highways improvements	£nil
Other non-works costs	£9,927
Equipment	£17,940
Contingency & optimism Bias	£102.034

Inflation	£134,029
Total	**£503,756**

Table 12: Option A capital cost appraisal

Revenue Variances

7.40 The revenue cost variances from the current baseline premises costs have been established following the process set out in part A. This reflects a number of adverse impacts including:

- Operation across two sites will result in a cost premium due to essential levels of plant and facilities duplication;
- Maintenance costs may be higher than expected given the degree of additional plant to be managed at both locations; and
- The labour increases within Portering and Housekeeping may be proportionally higher than expected due to the loss of scale economies in operating two sites.

FM Service	Revenue Variance
Estates	-£1,016,983
Housekeeping	£863,013
Portering	£564,270
Energy & utilities	£947,254
Total	**£1,357,554**

Table 13: Option A revenue cost appraisal

Acquisition, disposal and development costs

7.41 The general charges and receipts associated with all sites are set out in Appendix 20 of this report. In the context of this option the following costs and receipts are anticipated:

Site	Action	Cost £000	Receipt £000
No's 2 and 4 Edward Place	Acquisition	Commercially sensitive	£0

Table 14: Option A acquisition, disposal and development costs

Programme

7.42 The programme implications of delivering works both in advance at Overdale and within an active acute site at Jersey General are significant.

7.43 Firstly the Ambulatory Care facilities at Overdale will be required to enable service currently delivered at Jersey general to be transferred. Only then can meaningful construction works at Jersey General commence.

7.44 As a result the overall delivery programme for Option A is some 11.5 years as illustrated below.

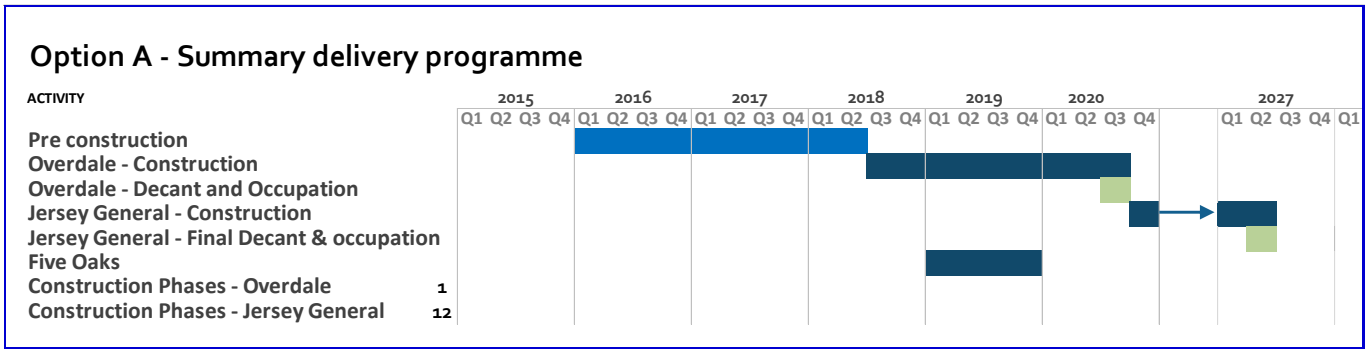

Figure 3: Option A summary delivery programme

7.45 Given the impact of this option on the operation of the current hospital high level analysis has been completed to establish the minimum bed capacity available for use across all programme phases.

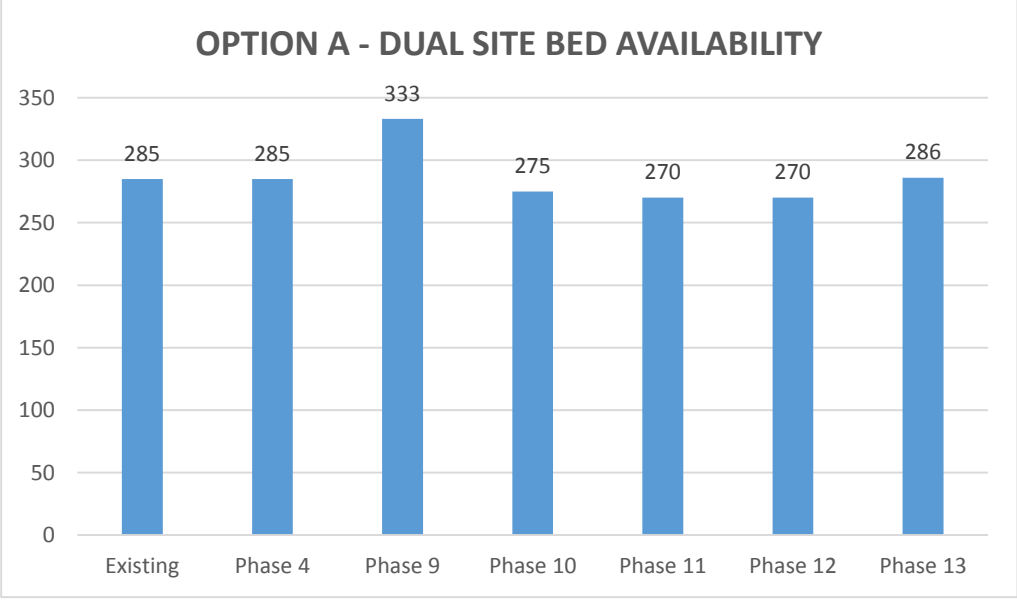

Figure 4: Option A bed availability during construction

Optimism Bias

7.46 Optimism Bias is currently calculated using revised UK Treasury guidance issued in 2013. However the previous SOC and Refined Concept Addendum schemes prepared by WS Atkins were calculated using an earlier version of this guidance. For consistency and comparability both levels of optimism Bias and contingency have therefore been included. A current Optimism Bias risk model for this option has been included in Appendix 18.

Residual Risk Register

7.47 The residual Risk Register to be met by contingency and optimism bias allowance is included within Appendix 23.

Conclusions

7.48 On the basis of this option costed using the previous SOC and Refined Concept Addendum level of contingency and optimism bias a number of key conclusions can be drawn from the above:

1. This option is attractive in that it presents only limited planning risk as the developments would occur on the existing hospital sites.
2. The option does not fully achieve the spatial targets set due in part to difficulties in remodelling existing accommodation.
3. The option is reasonably cost effective but leaves much of the existing hospital in its current condition.
4. The option presents significant operational disruption risk in proposing what is a very long term development within a fully operational acute hospital.
5. This option also presents significant commercial risk in that each phase would likely be delivered by a different contractor requiring complex contractual structures to deal with inter-phase issues.
6. The option cannot be delivered within the 10 year limit suggested by the previous Council of Ministers as being the maximum acceptable for the replacement programme for the Future Hospital.

7.49 It should be noted however that the application of contingency and optimism bias at levels calculated using current Treasury Guidance severely reduces the cost effectiveness of this option.

8 Option B – Overdale Hospital Site – 100% new build

The proposed solution

8.1 The following drawing schedule should be consulted alongside this proposal:

Purpose	Location
Site Red Line boundary drawings - Overdale Site Boundary Drawing	Appendix 3
Site analysis drawings - Overdale Site Analysis	Appendix 4
Site Layout drawings	Appendices 10 and 11

Table 15: Option B drawings

8.2 The proposed solution at Overdale arranges the hospital across virtually the entire site and uses the slope to reduce its impact on its immediate neighbours and general surroundings. This restricts the hospital to three storeys when viewed from Westmount Road but permits four storeys to be achieved as the hospital progresses down the slope.

8.3 The massing study is based on an industry standard floor to floor height of 4500mm for ground, first and second floors and reducing to 4200mm floor to floor for the third and fourth floors only.

8.4 Other architectural steps have also been taken to mitigate the visual impact of the building including breaking-down of the linear mass of the proposed south-western wing, the sub-division of the building into two distinct halves via the central atrium and the use of mono-pitch roofs with a possible sedum/planted surface finish.

8.5 The site strategy places the building footprint broadly in the zone of existing development identified for potential demolition. The size of facility, the retention of existing facilities (Westmount Centre, Poplars, William Knott) and the need for associated on-site traffic infrastructure and local parking/drop-off facilities will be supported by acquiring the Jersey Water headquarters site and also field 1551 located on the other site of Westmount Road.

8.6 The proposals also involve:

- The retention of Peter Crill House with little or no change to existing functions or departments within it.

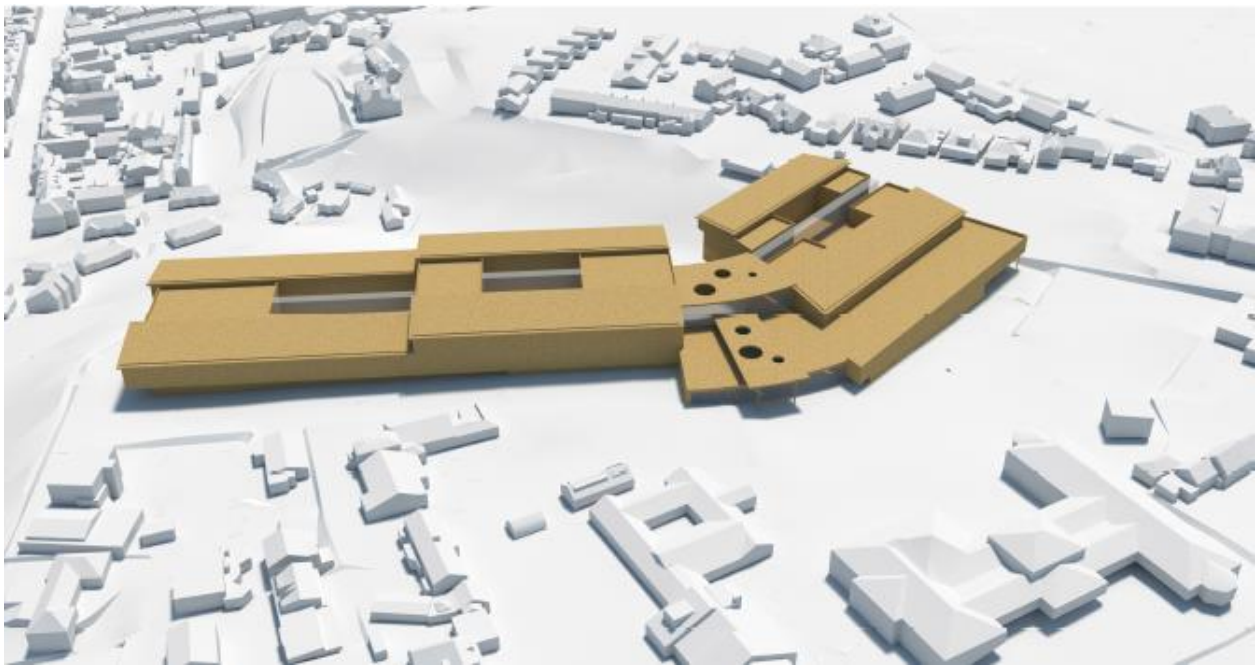

Figure 5: Option B proposed perspective view

8.7 Affording good emergency and blue light vehicular access onto the site has influenced the location of the Emergency department to the north east of the site.

8.8 Radiology and CDU are located adjacent to the Emergency department for efficient patient transfer and staff communication. The main entrance, which includes a restaurant/ café with views to Le Val Andre and landscape features to the west, connects to a 'hospital street' which provides access to all departments at every level.

8.9 The main OPDs are located to the south-west off the street. Easy access to Radiology and Pharmacy is possible across the main foyer. Taking advantage of the site topography, the mortuary and FM receipt/ unpacking area is located in a sub-level undercroft area, with direct lift transfer to each level allowing good separation of public and FM traffic.

8.10 The first floor is also divided into two separate zones. To the west via a separate entrance (with dedicated drop-off and short-stay parking) is located the Women's and Children's Hospital which includes Obstetrics and Gynaecology Clinic and adjacent Obstetrics Inpatients; Paediatric OPD and Inpatients; maternity and Neonatal Unit. To the west directly over the Emergency department and CDU and connected via a 'hot' lift core are located the Theatres Suites and Critical Care.

8.11 Dedicated FM lifts located along the hospital street will provide separate access to all departments directly from the sub-basement FM area, mentioned above.

8.12 The third floor includes Inpatient Wards based on 100% single rooms with en-suite facilities and ward central cores providing support accommodation to wards. All patient rooms are located on the perimeter of the building providing patients with views of the Bay, natural light and ventilation (where permitted). A Private Patient 'hospital' is located in the top floor of the building to the north east.

8.13 Whilst reasonably good clinical adjacency between key departments have been achieved the sloping site has necessitated an increase in the space required for circulation and communication which will lead to both operational inefficiency and a larger building.

8.14 A separate zone for energy centres, service yard and access for deliveries is therefore proposed on the existing Water Board Headquarters building to the north.

Access arrangements

8.15 Given the site location and existing access provision, the proposed approach is therefore founded on making existing routes more suitable in terms of highway safety, recognising that there are practical limitations associated with what extent of physical improvements can be achieved.

8.16 Proposed access points onto the site can be summarised as follows:

- Primary emergency and 'blue' light access to be via St John's Road and Tower Road (approaching from the north).
- Blue light access is also anticipated off Westmount Road between the reservoirs and crematorium with alternative access points via the roads either side of Thorpe Cottage.
- Fire tender access will be as necessary via above mentioned route and/ or Westmount Road. (See minutes of meeting held on 18.02.15 with representatives from SOJ Fire Service).
- Public/ visitor vehicular access will be as above.
- Secondary routes via Tower Road (approaching from west) and a new route from St Aubin's Road are considered impractical and cost prohibitive. As such these alternative routes have not been considered further at this stage.
- Separate ambulance drop-off point located to north of new hospital to provide direct access via dedicated emergency/ FM route off Westmount Road.
- FM vehicle access to service yard via above route in order to separate patient/ visitor traffic from emergency/ FM access.
- FM route extends west (on-site) to provide deliveries to Pharmacy, FM areas and Mortuary.

- Drop-off areas for patients and visitors along with a separate drop-off for Women's and Children's Entrance will be on-site with associated short stay parking.
- These arrangements were discussed with the States of Jersey Transport Authority and the Parish of St Helier's Deputy Controller of Technical and Environmental Services on 25.02.15 and both expressed concern about the transport impacts. Further consultation will be required with the Transport Authority, the Constable, the Roads Committee and the Parish of St Helier Assembly were this option to be considered preferred before it could be considered acceptable.

8.17 These arrangements will need to be supported by a series of transport infrastructure improvements which include:

- A Bus service upgrade both in terms of coverage and frequency to provide a viable public transport option for a greater proportion of hospital journeys. Early indications suggest that this should be focused on improving the service from Liberation Bus Station in St. Helier, in view of the opportunities that already exist to inter-connect with other island-wide services.
- The additional journey time associated with interchanging between connecting services may deter some hospital users from using the bus in preference to the car. A more desirable scenario is to reconfigure the existing bus network in such a way that affords the hospital direct access to a more extensive range of services. This would achieve a level of service befitting a modern hospital and requires further dialogue with TTS, the Parishes and Liberty Bus. Any decision making would need to be mindful of the physical limitations of the local road network and potential implications on existing service passengers.
- Controlled crossing facilities to improve pedestrian access given the existing single sided footway approaches.
- Completion of a series of road and junction improvements as an early indication of works that could be undertaken to optimise the network for access to both sites as is practicable within the existing constraints of the network. These include:

Location / junction	Description of the works	Benefits secured
St John's Road / Queens Road junction	Upgrade to traffic signalled arrangements	Provide dedicated opportunities for turning traffic to manoeuvre
Tower Road / St John's Road junction	Approach widening and/or conversion to traffic signals	Create additional queuing capacity
Westmount Road / Tower Road	Re-configuration of priority arrangement	Afford priority to movement between Westmount Road and the eastern section of Tower Road and incorporate improved pedestrian facilities

Westmount Road / Peirson Road junction	Upgrade to traffic signalled arrangements	Provide dedicated opportunities for turning traffic to manoeuvre
Rouge Boullion roundabout	Enlargement and widening	Improve traffic flow

Table 16: Overdale junction works

Parking Arrangements

8.18 The initial parking provision outlined below has been developed with reference to the States of Jersey Planning and Environment Parking Guidelines Policy Note: 3 [September 1988].

8.19 Out with the built up area (Area 3); 1 space for each doctor, surgeon, consultant and where appropriate essential medical personnel/ 1 space per 2 ancillary staff/ 1 space per 2 beds.

8.20 The application of the known car-parking standard might require up to 1230 spaces to be provided although it is also understood that a reduced number may be acceptable at a future detailed design stage based on a fuller assessment of activity and green travel initiatives.

8.21 Main parking provisions are proposed on the adjacent field to the east of the site, accessed off Westmount Road. Here, approximately 520 spaces are proposed (a further 75 spaces are also proposed on the hospital site itself in various locations (emergency short-stay, maternity short stay, service yard etc.).

Engineering Services

8.22 All existing services will be renewed along with new/upgraded incoming services for electricity and water and gas and oil to accommodate the increased building load. Gas and oil will be provided to allow dual fuel resilience for heating boilers.

8.23 Two new energy centres will be provided to house new mechanical and electrical equipment. Equipment will be divided between the two energy centres to provide an enhanced level of resilience.

8.24 Two separate medical gas plants rooms will be provided with a further bottled storage location to provide full resilience to HTM compliance.

8.25 A separate Heating Options study has been undertaken to investigate options in respect of heating the hospital. If the option of a 100% electric hospital is preferred, the space required for transformers, generators and HV/LV switchgear will increase.

Geotechnical proposals

8.26 The proposed buildings vary between three and four storeys in height with no basement and given the existing ground conditions, it is likely that a ground bearing slab may be suitable. Piles will be around 5-10m in depth with a 4-5m deep rock socket.

8.27 The site slopes generally from East to West and the main entrance will be at or around the existing site level, the ground slab of the building will therefore be elevated above ground level by approximately 3m at the West edge of the building. We propose that this could either be achieved through a retaining wall and compacted fill, or as a suspended slab on columns with cladding to create an undercroft.

8.28 It should be noted that, with bedrock close to the existing ground surface, the costs of excavation on the site for foundations and drainage can be expected to be higher than normal.

8.29 Management and treatment of the invasive Japanese Knotweed plant will be required.

8.30 Transport and Technical Services have confirmed the foul sewer to the east of King George V Homes has capacity to take the proposed development but it is likely both sewer runs which connect to this will be required to be re-routed around the development and upgraded.

8.31 The new hospital will result in an increase in surface water outflow from the site. New soakaways will be used where possible and existing utilized also as appropriate. Consideration will also be given to the use of Sustainable Drainage System in car park areas. There is the potential for surplus surface water to be connected to a sewer in Le Val Andre, but may require attenuation.

Achieved Hospital Size

8.32 The Single Site Functional Area Estimate V.05 has formed the basis of this proposed solution. Spatial plans have been developed to reflect the difficult site topography and, as a consequence, have resulted in the need for increased communication space to deliver the functionality required.

8.33 The following spatial results have been achieved. A full breakdown of the as drawn area by function has been included in Appendix 8.

Site	FAE target area	Actual Drawn Area	+/-
Overdale Hospital	46,841m^2	49,262m^2	+2,421m^2

Table 17: Option B spatial planning outcomes

Cost Appraisal

Capital

8.34 The capital cost of this option has been prepared following the process outlined in part A of this report and has been adversely impacted by the need for greater communication and circulation space required to respond to the nature of the site.

Cost element	Cost £000
Works Costs	£225,177
Fees	£31,525
Off-site highways improvements	£2,620
Other non-works costs	£8,474
Equipment	£21,587
Contingency & optimism Bias	£67,137
Inflation	£88,961
Total	**£445,481**

Table 18: Option B capital cost appraisal

Revenue variances

8.35 The revenue cost variances from the current baseline premises costs have been established following the process set out in part A.

FM Service	Revenue Variance
Estates	-£1,449,45
Housekeeping	£481,342
Portering	£259,139
Energy & utilities	£643,716
Total	**-£65,208**

Table 19: Option B revenue cost appraisal

Acquisition, disposal and development costs

8.36 The general charges and receipts associated with all sites are set out Appendix 20 of this report. In the context of this option the following costs and receipts are anticipated:

Site	Treatment	Cost £000
Overdale – Field 1551	Acquisition	Commercially sensitive
Overdale – Mulcaster House (Jersey Water)	Acquisition	Commercially sensitive
	Total	Commercially sensitive

Table 20: Option B acquisition, disposal and development costs

Programme

8.37 The overall delivery programme for Option B is 7 years as illustrated below.

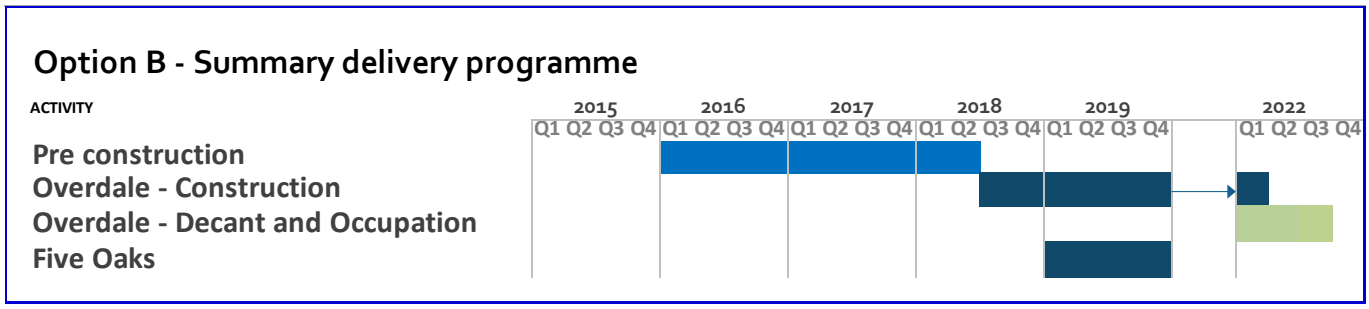

Figure 6: Option B summary delivery programme

Optimism Bias

8.38 Optimism Bias has been calculated using a UK Treasury model. This records the extent of mitigation achieved against a standard data set project and contract risk and from this, derives the overall level of optimism bias to be applied.

8.39 The modelled outcome for this option is included at Appendix 18 and requires the application of a 12% optimism bias to the project's capital cost.

Residual risk register

8.40 The residual Risk Register to be met by contingency and optimism bias allowance is included within Appendix 23.

Conclusions

8.41 A number of key conclusions can be drawn from the above:

- The site can accommodate the functional area required but occupies a significant footprint to address concerns over building height and the level of neighbourhood intrusion;
- The site is relatively unhampered enabling an efficient build programme to deliver the hospital in less than 7 years;
- Some spatial and adjacency compromises have been necessary to respond to the site's conditions which may limit the operational effectiveness that can be achieved in future;
- Site access and highway infrastructure remains of concern and detailed transport assessments will be required to verify the final safety and appropriateness of proposed routes particularly those associated with emergency vehicles; and
- The use of field 1551 for parking introduces further highway risks in that Westmount Road will need to be crossed to access the site.

9 Option C – Existing General Hospital site – 100% new build

9.1 The following drawing schedule should be consulted alongside this proposal:

Purpose	Location
Site Red Line boundary drawings	Appendix 3
Site analysis drawings	Appendix 4
Site Layout drawings	Appendices 10 and 11

Table 21: Option C drawn material

9.2 This solution proposes the phased construction of a new, larger hospital on the existing Jersey General hospital site.

9.3 Adjoining properties on Kensington Place will need to be acquired to increase the site capacity and to provide a footprint for the construction of the first phase through which existing occupied elements of the current hospital can be released.

9.4 The option provides a good opportunity to realise the emerging Acute Services Strategy and to improve the overall efficiency of the hospital through better spatial planning and a reduction in communication routes needed.

9.5 However the form of the hospital is to an extent a reflection of the phasing programme and the opportunity presented by the available construction area achieved through the acquisition of adjacent properties.

9.6 The content of the initial phases has therefore been driven as much by the need to free up available space in the existing hospital as by the need to secure good clinical functionality.

9.7 A maximum of seven storeys are proposed at the central core block which based on a storey height of 4.5m results in a hospital height of approximately 31.5m excluding plant. Perimeter blocks will be lower at 5 storeys or less to meet planning expectations.

9.8 This option also assumes:

- The retention of Peter Crill House (with no change to existing functions or departments within).
- Re-use or refurbishment of extensive areas within the existing and listed Granite Building.
- The revision of some road infrastructure to meet the revised access plan for the hospital entry points.

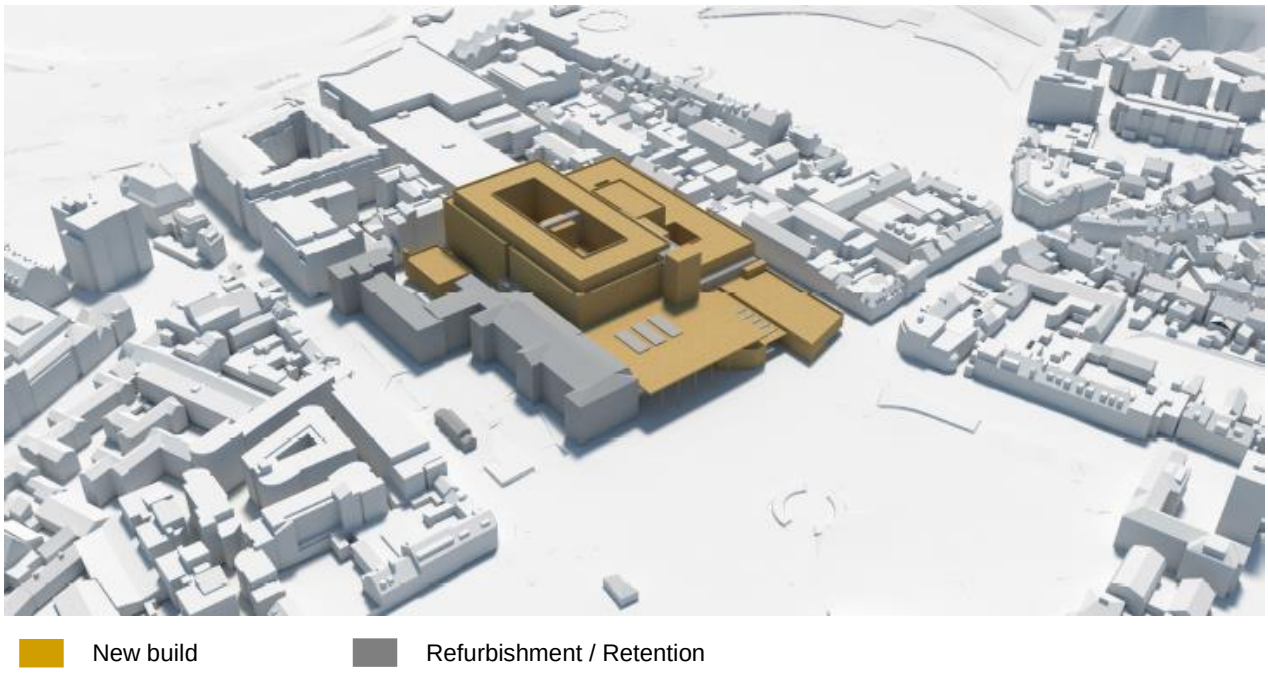

Figure 7: Option C proposed perspective view

9.9 The site strategy relocates specific functions to different locations to make best use of the site and the supporting infrastructure.

9.10 The main public entrance and associated facilities will be accessed from The Parade with main public stairs and lifts to all levels being located east and west of a central foyer. A further dedicated Women's and Children's Entrance will be located on the ground floor of the existing Granite Building.

9.11 The main hospital street and secondary vertical cores will provide access to all levels including:

- The main OPDs are located off the hospital street adjacent to Kensington Place with direct access to Radiology opposite.
- The Theatres Suite (including Day Surgery) is located on the first floor with direct vertical link(s) to the Emergency department below.
- Critical care is directly adjacent providing for efficient patient transfer between departments.
- Renal Dialysis and Oncology Chemotherapy are also located on the first floor providing easy access for patients from the main entrance and vehicular drop-off below.
- The Central Staff zone or 'hub' is located in the refurbished first floor of the Granite Building. This also provides good access and adjacency to the Education and Administrative functions in the existing Peter Crill House.

9.12 The hospital street separates the plant area from Pathology, Mortuary and the main FM Hub which is accessed through dedicated FM lifts and stairs to the FM Receipt zone on the ground floor. This allows the second floor to be considered as a 'service or support' zone segregating public/ visitor routes from hospital and FM access routes.

9.13 The third floor is dedicated to Women's and Children's services with access being provided via the Women's and Children's entrance located in the ground floor of the Granite Building only.

9.14 The central core of the third floor is occupied by Neonatal with direct access and adjacency to Maternity. Pharmacy is also located on the third floor with provision for a Pharmacy Dispensary located on the ground floor.

9.15 The fourth floor includes all Inpatients Wards with associated Ward Core areas arranged around a series of courtyards. Visitor/ public access will be via the Main Entrance Foyer and hospital street.

9.16 The Private Inpatients Ward and Private Patients OPD is located on the sixth floor. The Private Patients OPD is located adjacent to the Main Entrance Foyer lifts and stairs for ease of access whilst the wards enjoy views of St Helier and St Aubin's Bay.

9.17 The Granite Building and Peter Crill House will remain as the key elevations to Gloucester Street with a landscaped entrance forecourt in front of the new Women's and Children's Entrance (on the ground floor of the Granite Building).

Revised access arrangements

9.18 The reconfiguration of the site and repositioning of key entry points such as those for Emergency and ambulance drop off will require some adjustment to the highways immediately surrounding the site. This will include the re-designation of some roads to two-way operation to achieve a greater degree of resilience in the event of a road becoming blocked.

9.19 The revised access arrangements will be:

- Primary emergency and 'blue' light access to be via Gloucester Street and Newgate Street.
- The extension of Newgate Street to Kensington Place to create a 'ring road' around the site for resilience.
- Fire tender access will be directly onto site via Gloucester Street and Newgate Street.
- Re-designation of Newgate Street to two way traffic to provide emergency vehicle access and egress from both directions.
- Re-designation of part of Kensington Place to two way traffic to provide for alternative emergency vehicle access onto site as well as FM vehicle access to service yard.

- Formation of a public/ Visitor drop-off zone on-site adjacent to and accessed from The Parade.
- The existing ramp to the basement car park will be retained and the parking spaces adjacent to the ramp re-designated as short stay spaces for visitors to emergency.

9.20 Public transport will be improved by providing barrier/bollard controlled section to allow controlled access for bus and blue light movement around the hospital perimeter. These will require:

Location / junction	Description of the works	Benefits secured
St Aubin's Road roundabout	Modifications and adjustments to signal timings	Create additional queuing capacity on the section of road leading from the A1
Kensington Street / St Aubin's Road	Provision of traffic signals	Rationalisation of junction arrangement, incorporating pedestrian crossing facilities
Kensington Street / Lewis Street	Signage and kerb realignments	'No waiting zone'
Newgate Street / Kensington Place junction	Creation of a new junction	Access to/from Newgate Street to be restricted to blue light vehicles using a barrier or bollard arrangement
Newgate Street / Patriotic Street / Gloucester Street	Kerbline adjustments and alterations to road markings	Facilitate two way operation of Newgate Street. Access to/from the northern section of Newgate Street to be restricted to blue light vehicles using a barrier or bollard arrangement

Table 22: Option C proposed transport works

9.21 Full details of proposed transport arrangements are provided in Appendix 5 – Local infrastructure plan and transport assessment.

9.22 Highway changes were considered by the States of Jersey's Transport Authority and the Parish of St Helier's Deputy Controller of Technical and Environmental Services and, whilst these changes were not objected to in principle, further consultation will be required with the Parish of St Helier's, the Constable, the Roads Committee and the Parish Assembly should this option be selected.

9.23 A meeting with representatives of the States of Jersey Fire service held on the 18.02.15 secured a similar level of support for these arrangements.

Parking arrangements

9.24 Whilst general parking provision is governed by the States of Jersey Planning and Environment Parking Guidelines set out in Policy Note: 3, the States of Jersey Planning Officer has confirmed that a final parking solution will need to be based on a full transportation study and supported by a Green Travel Plan.

9.25 In this context the total required provision of 470 spaces will be provided by:

- Within the built up area (Area 2), one space for each doctor, surgeon, consultant and where appropriate essential medical personnel will be provided and 1 space for every 3 ancillary staff and 1 space per 3 beds.
- Out with the built up area (Area 3); 1 space for each doctor, surgeon, consultant and where appropriate essential medical personnel/ 1 space per 2 ancillary staff/ 1 space per 2 beds.
- 37 short stay spaces adjacent to Peter Crill House and Women's and Children's entrance.
- 13 spaces in existing basement and 5 spaces adjacent to ramp down.

9.26 The Remaining spaces will continue to be provided within the Patriotic Street multi-storey car park based on the current arrangements where the lower basement level provides dedicated parking for visitors and those with hospital appointments.

Engineering Services

9.27 Under this option all engineering services will be completely renewed to include:

- New/upgraded incoming services for electricity and water and gas and oil will be provided to accommodate the increased building load. Gas and oil will be provided to allow dual fuel resilience for heating boilers.
- Two new energy centres will be provided to house new mechanical and electrical equipment with plant being distributed across these facilities to provide enhanced resilience.

9.28 To meet the energy security needs of this option all plant will initially be accommodated in a single full size energy centre until the later construction of the second energy centre at which time all duplicate plant will be relocated.

9.29 Two separate medical gas plant rooms will be provided with a further bottled storage location to provide full resilience to HTM compliance.

9.30 A separate Heating Options study has been undertaken to investigate the possible options for heating the hospital. This includes an option for adopting an 'all electric' solution which has not been implemented at this stage.

Geotechnical proposals

9.31 The new buildings vary in height from five to seven storeys with the existing basement being partially retained.

9.32 Piled foundations are anticipated and potentially a suspended ground floor slab. Piles will be around 15-20m in depth with a 6-7m deep rock socket. There is the potential to consider re-use of the existing piles in some areas subject to a full technical assessment.

9.33 High level review undertaken suggests that the effect of overtopping sea water to the south of the site will be not be significant. However, the entrances and basement facilities in this area will include protection measures to mitigate the risk of water ingress.

9.34 High level analysis indicates that the existing services have the capacity to cope with the increased scale of the new hospital. Existing connections to the main drains will therefore be reused

9.35 As there is no increase in surface water run-off any new buildings on the campus will be able to connect to the existing dedicated sewer in The Parade via existing on-site drainage where possible.

Achieved Hospital size

9.36 The Single Site Functional Area Estimate V.05 has formed the basis of this proposed solution.

9.37 The following spatial results have been achieved. A full breakdown of the as drawn area by function has been included in Appendix 8.

Site	FAE target area	Actual Drawn Area	+/-
Jersey General	46,841m^2	48,399m^2	+1,558m^2

Table 23: Option C spatial planning outcomes

Cost Appraisal

Capital

9.38 The capital cost of this option has been prepared following the process outlined in part A of this report and has been adversely impacted by :

- The increased programme resulting from the adoption of a phased development process;
- The programme impact of operating on an active hospital campus and the need to guarantee service security during the construction process

Cost element	Cost £000
Works Costs	£264,617
Fees	£39,693
Off-site highways improvements	£682
Other non-works costs	£14,420
Equipment	£21,349
Contingency & optimism Bias	£124,595
Inflation	£164,373
Total	**£629,729**

Table 24: Option C capital cost appraisal

Revenue variances

9.39 The revenue cost variances from the current baseline premises costs have been established following the process set out in part A.

FM Service	Revenue Variance
Estates	-£1,503,193
Housekeeping	£433,867
Portering	£221,185
Energy & utilities	£605,959
Total	**-£242,182**

Table 25: Option C revenue cost appraisal

Acquisition, disposal and development

9.40 The general charges and receipts associated with all sites are set out Appendix 20 of this report. In the context of this option the following costs and receipts are anticipated:

Site	Treatment	Cost £000	Receipt £000
Nos. 2 and 4 Edward Place	Acquisition	Commercially sensitive	£0
General Hospital – Stafford and Revere Hotels	Acquisition	Commercially sensitive	£0
Total		Commercially sensitive	£0

Table 26: Option C acquisition, disposal and development costs

Programme

9.41 The overall delivery programme for Option C is some 11.5 years as illustrated below.

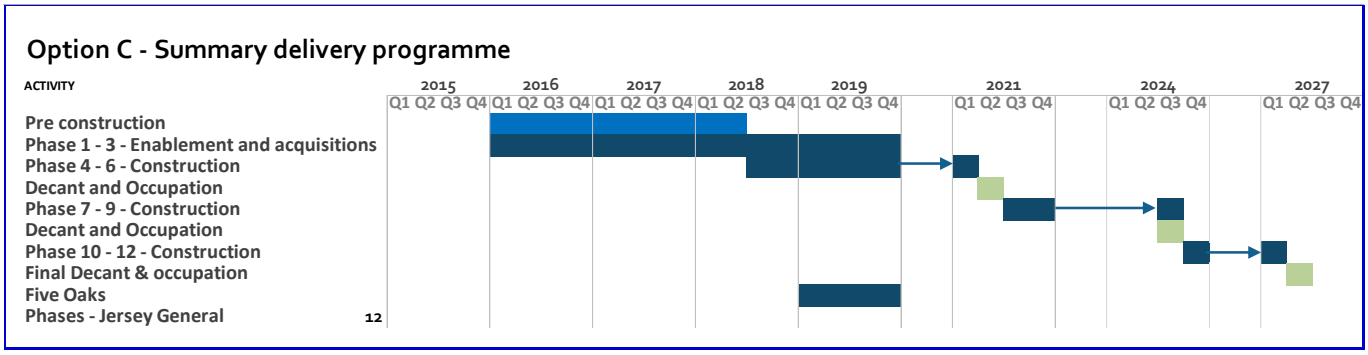

Figure 8: Option C summary delivery programme

9.42 Given the impact of this option on the operation of the current hospital high level analysis has been completed to establish the minimum bed capacity available for use across all programme phases. This indicates that the minimum required bed capacity can at all times be maintained either within the existing hospital or in combination with transferred phases of the new hospital.

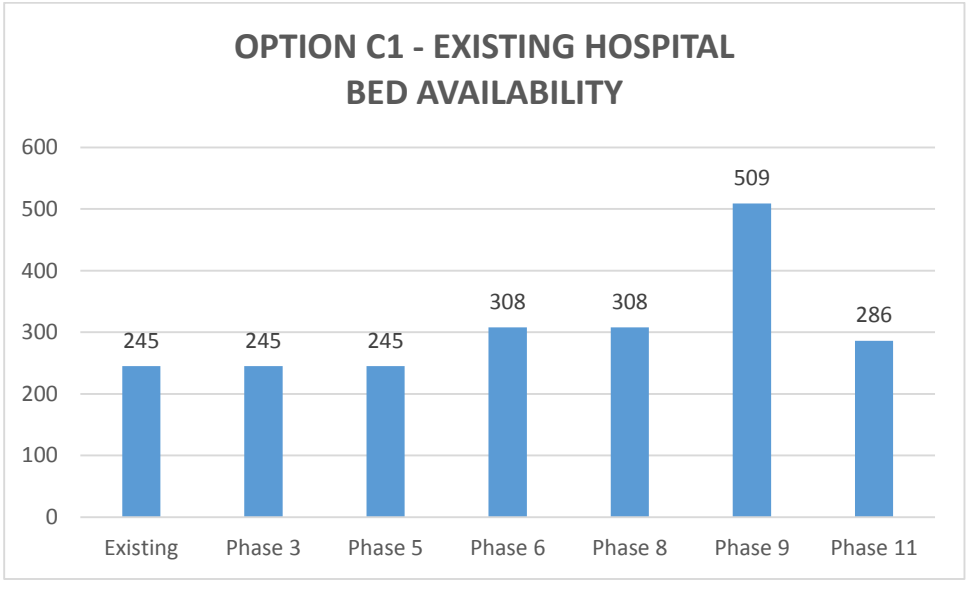

Figure 9: Option C bed capacity during construction

Optimism Bias

9.43 Optimism Bias has been calculated using a UK Treasury model. This records the extent of mitigation achieved against a standard data set project and contract risk and from this, derives the overall level of optimism bias to be applied.

9.44 The modelled outcome for this option is included at Appendix 18 and requires the application of a 21% optimism bias to the project's capital cost.

Residual risk register

9.45 The residual Risk Register to be met by contingency and optimism bias allowance is included within Appendix 23.

Conclusions

9.46 The following key conclusions can be drawn from the above:

- The option offers a good prospect for delivering good clinical adjacencies and hospital planning with only limited compromises being needed to reflect the limitations of phasing;
- The need to adopt a phased programme severely limits the pace of construction and introduced many more 'slower' elements associated with decanting and remobilisation of construction works each time a phase commences;
- The operation in close proximity to the existing operational hospital will present significant risk of service disruption and loss as connection and disconnections are undertaken. This impact will affect the hospital and the construction process;
- The potential for nuisance to neighbours and in particular patients and staff during construction will be significant;
- The acquisition of additional site area will allow the increased hospital size to be effectively delivered along with an improvement in amenity space and civic contribution;
- The cost of delivering this option is high; and
- The near 12 year programme does not meet project expectations and will result in a significant difference in quality between for example the initial phase delivered and the final phase delivered several years later.

10 Option D – Waterfront Site – 100% New build

The Proposed Solution

10.1 The following drawing schedule should be consulted alongside this proposal:

Purpose	Location
Site Red Line boundary drawings	Appendix 3
Site analysis drawings	Appendix 4
Site Layout drawings	Appendices 10 and 11

Table 27: Option D drawn material

10.2 This option seeks to relocate the existing Jersey General Hospital to a new hospital located at the Waterfront.

10.3 Being a new build this option provides a relatively unimpeded opportunity to realise the emerging Acute Services Strategy and to improve the overall efficiency of the hospital through optimised clinical design.

10.4 The hospital layout and overall massing reflect a considered response to the site's immediate surroundings with the building's height limited to complement those of its immediate neighbours and the anticipated Jersey International Finance Centre.

10.5 A maximum of 5 storeys are proposed based on storey heights of 4.5m ground, first and second floors and reducing to 4.2m for the remaining third and fourth floors. This establishes an overall height of approximately 22m and therefore slightly lower than the proposed height for the Finance Centre blocks.

10.6 The form of the building creates a protected landscaped entrance forecourt to the east and presents a lower scale (Energy Centre) adjacent to the existing Radisson Blu hotel. The FM receipt and service yard are under cover and within the building envelope thereby minimising visual impact from Rue De La Liberation. The fragmented form of the proposals attempts to break down the scale of the hospital and provide visual interest from a number of viewpoints.

10.7 The proposal includes the replacement of Jardins de la Mer within a redevelopment of the Jersey General Hospital site once it has been vacated.

10.8 The proposal also assumes:

- The retention of all existing administration and education facilities at Peter Crill House.
- The revision of some road infrastructure to meet the revised access plan for the hospital entry points.

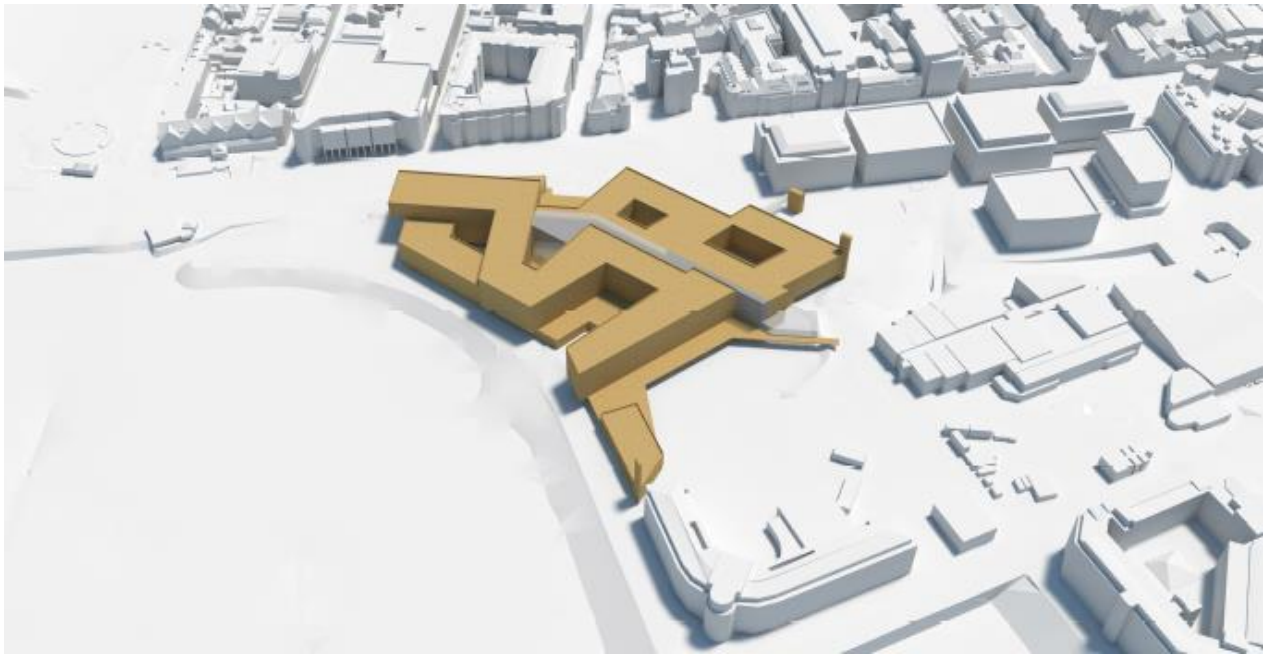

Figure 10: Option D proposed perspective view

10.9 The proposed building form, massing and functional layout has been developed from the emerging Acute Services Strategy and an appreciation of the particular environment and access arrangements at the Waterfront.

10.10 The preferred emergency and blue light vehicular access onto the Waterfront site has influenced the location of the Emergency department to the west of the existing site. This provides for an uninterrupted vehicular route to the Emergency department separate from the main public entrances located to the east. Further separation of public access routes and the FM route improves communication and safety.

10.11 Entering the site from the east, visitors will arrive into a landscaped forecourt with covered drop-off zones adjacent to a main hospital entrance and a dedicated Women's and Children's entrance. Two separate energy centres have been provided with one being located adjacent to the FM service yard with the second located adjacent to the gable end of the existing Radisson Blu hotel.

10.12 Radiology and EAU are located adjacent to the Emergency department for efficient patient transfer and staff communication. The EAU located to the south west will provide views for both patients and staff of St Aubin's Bay.

10.13 The main entrance includes a restaurant/ café with views to St Aubin's bay connects to a 'hospital street' which provides access to all departments at every level. The main OPDs are located to the south off the street with good adjacency to Radiology and dispensing Pharmacy.

10.14 A covered bridge connection and 'sub-street' provides direct access from the Esplanade across Rue De La Liberation into the main hospital. An Energy Centre and FM receipt/ unpacking area is located adjacent to the service yard. The FM area has dedicated lifts serving the FM 'hub' on the second floor.

10.15 The first floor is divided into two separate zones. To the east via a separate entrance is located the Women's and Children's Hospital which includes separate entrances for Obstetrics and Gynaecology Clinic and adjacent Obstetrics Inpatients; Paediatric OPD and Inpatients; maternity and Neonatal Unit. To the west directly over the Emergency department and EAU and connected via a 'hot' lift core is located the Theatres Suite and Critical Care.

10.16 The second floor is a 'service' zone with FM 'hub', Central Staff zone (enjoying views to St Aubin's bay) and plant areas servicing the Theatres Suite and Critical Care below. Dedicated FM lifts located along the second floor street will provide separate access to all departments.

10.17 The third floor includes Inpatient Wards based on 100% single rooms with en-suite facilities and ward central cores providing support accommodation to wards. All patient rooms are located on the perimeter of the building providing patients with views of the Bay, natural light and ventilation (where permitted). A Private Patient 'hospital' is located to the north east which provides a separate entrance, OPD and Inpatient Ward.

10.18 The fourth floor includes the balance of Inpatient Wards (to the south of the street only).

Access arrangements

10.19 The site access arrangement will be:

- Emergency and 'blue' light access to be via management of the existing traffic controls at the junction of the Esplanade, Route De La Liberation and Gloucester Street.
- Fire tender access will be directly onto site as above (see also minutes of meeting held on 18.02.15 with representatives from SOJ Fire Service).

- All other traffic will access the site via La Route Du Port Elizabeth and Rue De L'Etau (with consideration given to the traffic impact of both existing and proposed ferry services).
- All other traffic will exit off site via the same route (as noted above) or directly onto Rue De La Liberation via the existing slip road (moving in a westerly direction only).
- FM deliveries will be via a separate access adjacent to Rue De La Liberation into a dedicated and enclosed service yard. Egress from the main entrance will return via Rue De L'Etau or via an improved slip road directly onto Rue De La Liberation (exit in an easterly direction only). All FM vehicles will exit via the latter route.

10.20 Highway changes were considered by the States of Jersey's Transport Authority and the Parish of St Helier's Deputy Controller of Technical and Environmental Services and, whilst these changes were not objected to in principle, further consultation will be required with the Parish of St Helier, the Constable, the Roads Committee and the Parish Assembly should this option be selected.

10.21 Given the site location and existing access provisions, some highway/infrastructure improvements are also proposed to increase access resilience and to optimise the current road network:

Location / junction	Description of the works	Benefits secured
A1 / A2 junction	Reconfiguration of traffic signalled junction	Achieve additional queuing capacity
A1 / Gloucester Street junction	Reconfiguration of traffic signalled junction	Provision of a new all-movements site access junction
A1 / Esplanade junction	Adjustment of lane allocations and road markings	Effective tie in with A1 / Gloucester Street improvement
A1 / Castle Street / La Route du Port Elizabeth roundabout	Approach widening and/or conversion to traffic signals	Improved traffic flow
La Route du Port Elizabeth / Rue de L'Etau roundabout	Approach widening	Achieve additional queuing capacity
Rue de L'Etau roundabout	Approach widening	Achieve additional queuing capacity

Table 28: Option D proposed transport works

10.22 Full details of access and transport proposals are provided in Appendix 5 – Local infrastructure and transport assessment.

Parking arrangements

10.23 Whilst general parking provision is governed by the States of Jersey Planning and Environment Parking Guidelines set out in Policy Note: 3, the States of Jersey Planning Officer has confirmed that a final parking solution will need to be based on a full transportation study and supported by a Green Travel Plan.

10.24 In this context the total required provision of 470 spaces will be provided by:

- Within the built up area (Area 2); 1 space for each doctor, surgeon, consultant and where appropriate essential medical personnel/ 1 space per 3 ancillary staff and 1 space per 3 beds.
- Out with the built up area (Area 3); 1 space for each doctor, surgeon, consultant and where appropriate essential medical personnel/ 1 space per 2 ancillary staff/ 1 space per 2 beds.
- 8 short stay spaces (to include 2 disabled spaces) adjacent to the Emergency department entrance.
- 80 spaces in basement as dedicated staff car parking.
- Car parking spaces for circa 32 visitors including 8 disabled spaces will be provided between the Main Visitor Entrance and the dedicated Women's and Children's Entrance. Pedestrian and cycle paths will be extended to the site consistent with the development of a Green Travel Plan for the new hospital.

10.25 The remaining required spaces of some 400 will continue to be provided within the Patriotic Street multi-storey car park based on the current arrangements where the lower basement level provides dedicated parking for visitors and those with hospital appointments.

10.26 Should this prove insufficient during any subsequent development work sensitivity has been undertaken on a 500 space underground car park.

Engineering services

10.27 A split energy centre strategy is proposed to increase services resilience. Two new energy centres will be provided to house new mechanical / electrical equipment with all plant being divided between them.

10.28 New/upgraded incoming services for electricity and water and gas and oil will be provided to accommodate the increased building load. Gas and oil will be provided to allow dual fuel resilience for heating boilers.

10.29 Two separate medical gas plant rooms will be provided with a further bottled storage location to provide full resilience to HTM compliance.

10.30 A separate Heating Options study has been undertaken to investigate the possible options for heating the hospital. This includes the option of adopting an 'all electric' solution which has not been implemented at this stage.

Geotechnical proposals

10.31 Given the existing ground conditions, it will be necessary to provide piled foundations and potentially a suspended ground floor slab. Piles will be around 15-20m in depth with a 3-4m deep rock socket.

10.32 Management and treatment of any contaminated land will be required.

10.33 Remediation works may be required to deal with soil arising from the piled foundations and any further disturbances to below ground/ground build up. Given the identification of some asbestos within the existing ground build up these will require further investigation and appropriate methods to mitigate and appropriately deal with this and other contaminants identified.

10.34 Given that the access routes into the site are susceptible to flooding, a number of options have been considered to mitigate against the risk of tidal impact. These include raising the A1 dual carriageway in both directions by 2m with new slip roads for blue light access, provision of raised slip roads, strengthening the sea wall defences which at this stage is envisaged to consist of a flood defence wall with raised pedestrian promenade type feature following the profile of the wall's height, and the provision of a new tidal protection hump.

10.35 Transport and Technical Services have confirmed the foul sewer crossing the site has capacity to take the proposed development but it is likely that the sewer will be required to be re-routed around the development and upgraded to accommodate the branch connection from La Frigate Café (which may also require re-routing).

10.36 Consideration will be given to the use of new soakaways, however, the tidal nature of the ground water on the site may restrict performance.

10.37 The existing culvert will be required to be diverted further south away from the new building's footprint.

Achieved Hospital size

10.38 The Single Site Functional Area Estimate V.05 has formed the basis of this proposed solution.

10.39 The following spatial results have been achieved. A full breakdown of the as drawn area by function has been included in Appendix 8.

Site	FAE target area	Actual Drawn Area	+/-
Waterfront	46,841m^2	49,623m^2	+2,782m^2

Table 29: Option D spatial planning outcomes

Cost Appraisal

Capital

10.40 The capital cost of this option has been prepared following the process outlined in part A of this report and has been positively impacted by :

- The reduced programme possible due to a single construction phase on an unoccupied site
- A single commissioning and decant phase on completion

Cost element	Cost £000
Works Costs	£232,242
Fees	£32,514
Off-site highways improvements	£9,523
Other non-works costs	£13,194
Equipment	£21,729
Contingency & optimism Bias	£68,334
Inflation	£92,981
Total	**£470,517**

Table 30: Option D capital cost appraisal

Revenue variances

10.41 The revenue cost variances from the current baseline premises costs have been established following the process set out in part A.

FM Service	Revenue Variance
Estates	-£1,426,905
Housekeeping	£501,201
Portering	£275,016
Energy & utilities	£659,509
Total	**£8,821**

Table 31: Option D revenue cost appraisal

Acquisition, disposal and development cost

10.42 The general charges and receipts associated with all sites are set out in Appendix 20 of this report. In the context of this option the following costs and receipts are anticipated:

Site	Treatment	Cost £000	Receipt £000
None	Acquisition	£0	£0
Total		£0	£0

Table 32: Option D acquisition, disposal and development costs

Programme

10.43 The overall delivery programme for Option D is 6 years and 6 months as illustrated below.

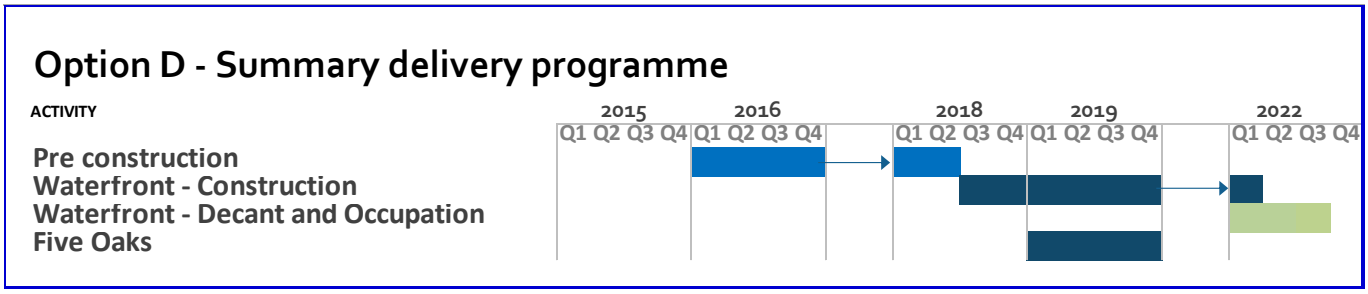

Figure 11: Option D summary delivery programme

Optimism Bias

10.44 Optimism Bias has been calculated using a UK Treasury model. This records the extent of mitigation achieved against a standard data set project and contract risk and from this, derives the overall level of optimism bias to be applied.

10.45 The modelled outcome for this option is included at Appendix 18 and requires the application of an 11% optimism bias to the projects capital cost.

Residual risk register

10.46 The residual Risk Register to be met by contingency and optimism bias allowance is included within Appendix 23.

Conclusions

10.47 The following key conclusions can be drawn from the above:

- The option offers a very good prospect for delivering best practice clinical adjacencies and hospital planning with restrictions being largely associated with the positioning of hospital entrances due to road access;
- The single phase development on an unfettered site results in a very short build programme of less than 7 years;
- Opportunity exists to provide architecture that complements and through this enhances the quality of its surroundings;
- The option's future flexibility strategy will in general need to be vertically orientated due to the availability of external site;
- The option will be delivered along with an improvement in amenity space and civic contribution.

11 Option E – People's Park – 100% New build

The Proposed Solution

11.1 The following drawing schedule should be consulted alongside this proposal:

Purpose	Location
Site Red Line boundary drawings	Appendix 3
Site analysis drawings	Appendix 4
Site Layout drawings	Appendices 10 and 11

Table 33: Option E drawn material

11.2 This option seeks to relocate the existing Jersey General Hospital to a reasonably large undeveloped site at People's Park.

11.3 Being a relatively unfettered site, with a good seaward outlook it provides a particularly good opportunity to realise the emerging Acute Services strategy and to improve the overall efficiency of hospitals services through optimised clinical design.

11.4 The hospital layout and overall massing has been developed to balance the use of the available footprint whilst reflecting a considered response to its immediate surroundings. The proposed building height has been limited to complement the existing buildings along Westmount Road with the main hospital frontage to St Aubin's Road is also being set back to respect the smaller existing properties along Peirson Road.

11.5 A maximum of 6 storeys are proposed based on floor to floor heights of 4.5m for ground, first and second floors, reducing to 4.2m for the remaining third, fourth and fifth floors. This limits building height to some 26.1m. A set-back external plant area is included at the rooftop which will be a part enclosed/ part louvre-faced enclosure.

11.6 The hospital is arranged around a central courtyard, with inpatient wards arranged in an arc to follow the existing topography and to take advantage of the views over St Helier and St Aubin's Bay.

11.7 This form allows a large landscaped frontage to the hospital to be created along St Aubin's road providing safe drop-off areas for both the Emergency entrance and the main Public Entrance. The 3rd and 4th parcels of land conveyed to the Parish of St Helier (POSH) and are retained and integrated into the overall landscaped setting.

11.8 FM activity has been separated from public areas by locating FM services and major plant areas within the basement. This is accessed using a separate service entrance that proceeds to the rear of the hospital effectively segregating FM traffic and activity from that of the hospital and public areas.

11.9 The proposal assumes:

- The retention of all existing administration and education facilities at Peter Crill House.
- The revision of some road infrastructure in and around St Helier to meet the revised access plan for the hospital entry points.

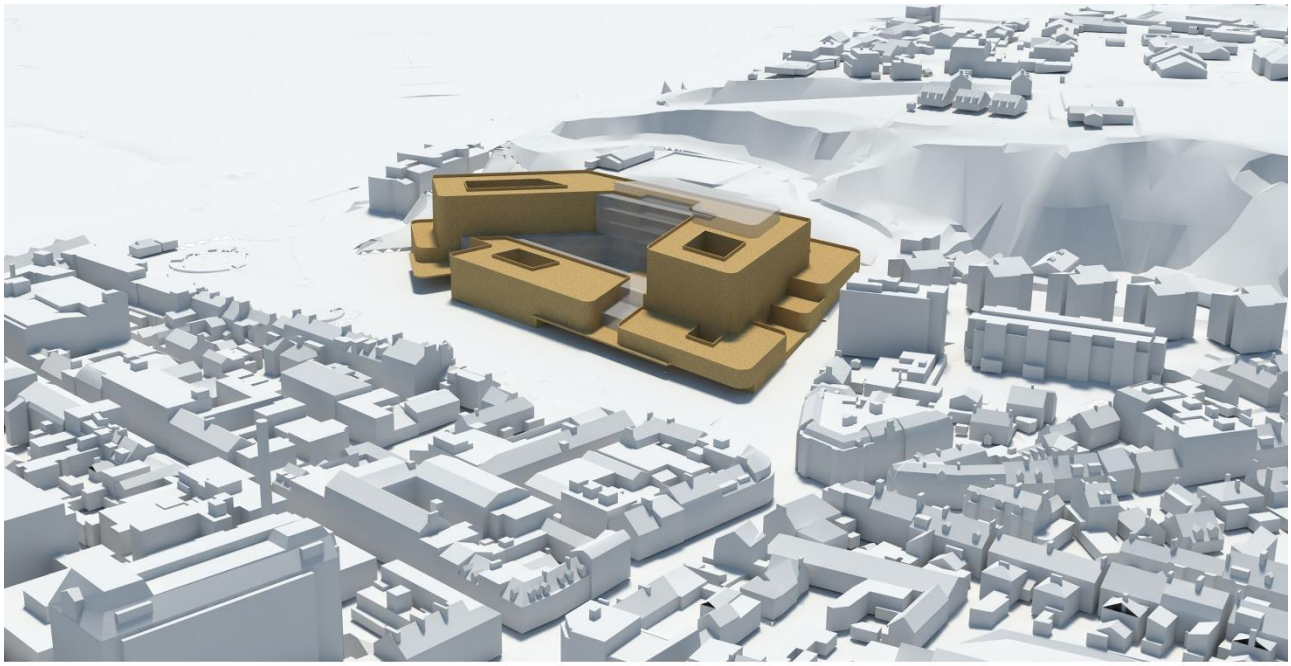

Figure 12: Option E proposed perspective view

11.10 The proposed building form, massing and functional layout has been developed from the emerging Acute Services Strategy and an appreciation of the particular environment and access arrangements at People's Park.

11.11 Emergency and other 'blue light' vehicles arriving from the west will approach the hospital via the roundabout on the A2/ St Aubin's Road. This enables a direct, dedicated emergency access onto the site to be formed that is separate to the main Public Entrances located to the east. FM vehicles

will also enter the site using this access point and approach the FM facility using the dedicated service road formed to the rear of the hospital.

11.12 Other emergency vehicles arriving from the north will access the hospital via Elizabeth Place, Kensington Place, onto Kensington Street and then onto St Aubin's. A series of highways improvements including the introduction of traffic controlled junctions at The Parade and Kensington Street will be required to maintain safe access and to effect good traffic management.

11.13 The main Public Entrances are located further east along St Aubin's Road. Visitors will arrive onto a landscaped forecourt with covered drop-off zones for the main hospital entrance as well as separate entrances from Women's and Children's hospital and Private Patients. Short stay parking and disabled parking has been located adjacent to this drop-off area.

11.14 The main entrance leads to a concourse off which is located visitor facilities and the restaurant/ café with views into the central courtyard garden. The concourse is connected to a hospital street which encloses the courtyard and provides access to all ground floor departments. The circular route organised around the courtyard assists patient, visitor and staff orientation and Way Finding.

11.15 Easy access to the main OPDs has been achieved by locating them close to the main entrance and concourse. Both Pharmacy and Radiology are located adjacent whilst the latter has direct connection to the Emergency Department. Pharmacy is supplied via dedicated FM lifts from the service yard and Materials Management below.

11.16 The Emergency Department and EAU has a separate ambulance drop-off and vehicular access with 'hot lift' connection to Theatres and Critical care on the first floor. Chemotherapy and renal are also located on the ground floor for ease of patient access. Both have views of landscaped frontage to St Aubin's Road as well as the enclosed courtyard. A dedicated entrance is provided for both Private Patients and Women's and Children's services.

11.17 The first floor is divided into two separate areas. Theatres with a direct connection to Critical Care are located to the west whilst Women's and Children's services accessed via a dedicated and secure entrance are located to the east.

11.18 Maternity is located to the north-east adjacent to theatres and Obstetrics Inpatients is adjacent to it with views onto the park and a first floor level courtyard. Gynaecology OPD is located within the Women's hospital with discrete access via the main concourse below. Paediatric OPD and Paediatric Inpatients occupy the south-east corner with immediate access from the dedicated entrance at first floor level. The Paediatric Inpatient unit has access to a safe and secure first floor level courtyard.

11.19 The second floor accommodates the main plant areas serving theatres and critical care and the two discrete Energy Centres. Pathology and Staff facilities are also located at this level with the latter having access to a staff garden adjacent to the northern park edge.

11.20 Private Patients OPD and inpatients accessed via a dedicated entrance located to the south with views over St Helier and St Aubin's Bay.

11.21 The third, fourth and fifth floors accommodate the Inpatient beds grouped into two 32 bed wards per floor along with their associated Ward Core facilities. All single patient bedrooms are located on the western, southern and eastern wall perimeter to maximise natural light and views. Associated plant areas are adjacent to the Ward Cores.

Access arrangements

11.22 The site access arrangement will be:

- Emergency and other 'blue light' vehicles arriving from the east and west will approach the hospital via the roundabout on the A1/A2/ onto St Aubin's Road and directly access the hospital; Traffic light flow control at the Elizabeth Street/Parade Junction will also be required to provide temporary route for emergency vehicles up short one way road.
- Emergency vehicles arriving from the north will access the hospital via Elizabeth Place, Kensington Place, onto Kensington Street and then onto St Aubin's. A series of highways improvements including the introduction of traffic controlled junctions at The Parade and Kensington Street will be required to maintain safe access and to effect good traffic management.
- Fire tender access to the rear of the site will use the rear service road;
- All other traffic will access the site from St Aubins Road and will be routed on site to the other non-emergency department entrances.
- FM vehicles will enter the site from the A2 / St Aubins Road roundabout and gain access to the FM facilities and service yard using the dedicated service road formed to the rear of the hospital.

11.23 The proximity of the site to the existing hospital and town centre would necessitate a more detailed transport appraisal to fully reflect impact from any redevelopment of Jersey General. However at this stage the following highways and local access infrastructure improvements have been included:

Location / junction	Description of the works	Benefits secured
St. Aubin's Road roundabout	Road widening to improve flow and safety	Create additional queuing capacity

A1/A2 signal controlled junction at end of St. Aubin's road	Modification of signals to provided dedicated left-turn lane	Increase capacity of this route
Kensington Street/St. Aubin's Road junction	Traffic signals, to incorporate pedestrian crossing facilities	Ease peak hour congestion subject to further works downstream

Table 34: Option E proposed transport works

11.24 Full details of access and transport proposals are provided in Appendix 5 – Local infrastructure and transport assessment.

Parking arrangements

11.25 Whilst general parking provision is governed by the States of Jersey Planning and Environment Parking Guidelines set out in Policy Note: 3, the States of Jersey Planning Officer has generally confirmed that parking solutions would need to be based on a full transportation study and supported by a Green Travel Plan.

11.26 In this context the total required provision of 470 spaces will be provided by:

- 8 short stay spaces (to include 2 disabled spaces) adjacent to the Emergency department entrance.
- 140 spaces within the hospital basement as dedicated staff car parking.
- 12 disabled spaces opposite main entrance drop-off area
- 5 private patient short stay spaces
- The Remaining required spaces will continue to be provided within the Patriotic Street multi-storey car park based on the current arrangements where the lower basement level provides dedicated parking for visitors and those with hospital appointments.

11.27 Should this prove insufficient during any subsequent development work sensitivity has been undertaken on a 500 space underground car park.

Engineering services

11.28 Engineering resilience will be achieved through the use of two discrete energy centre / Plant areas positioned at different locations within the second floor. Each will be provided with separate 100% rated incoming services for electricity, water, gas and oil to provide utility resilience.

11.29 Two separate medical gas plant rooms will be provided with a further bottled storage location to provide full resilience to HTM compliance.

11.30 Roof top plant areas have been identified for key external plant to be located as near as possible to serviced locations. These will be screened to avoid any visual impact.

11.31 A separate Heating Options study has been undertaken to investigate the possible options for heating the hospital. This includes the option of adopting an 'all electric' solution which has not been assumed at this stage.

Geotechnical proposals

11.32 The lack of any historical development at the site provides little ground investigation evidence upon which to form a view of specific ground. The site borders a large volcanic rock outcrop and it is likely that underlying rock will be found at relatively shallow depths.

11.33 The rock profile across the site is not known and as such may impact may on excavations particularly those associated with the basement/foundations and works near the escarpment face. Ground investigations for developments in Kensington Place some 100m to the east identifies rock at 9m below ground level.

11.34 To minimise risk the basement has been positioned to the front of the site along St. Aubin's road so as to be as far away as possible from the foot of the escarpment.

11.35 The ground floor accommodation of the site is 12m above datum level at its lowest point and initial reviews suggest a low risk of flooding. As such only nominal allowances have been included for flood risk alleviation works to levels at this stage. This will be reviewed further under detailed design.

11.36 A new drainage run from the site to a beach outfall to the sea passing under the existing A1 and A2 roads will be provided which will accommodate displaced surface water from the Westmount development and new hospital allowing the existing attenuation tanks to be removed.

Achieved Hospital size

11.37 The Single Site Functional Area Estimate V.05 has formed the basis of this proposed solution.

11.38 The following spatial results have been achieved. A full breakdown of the as drawn area by function has been included in Appendix 8.

Site	FAE target area	Actual Drawn Area	+/-
People's Park	46,841m^2	48,797m^2	+1,956m^2

Table 35: Option E spatial planning outcomes

Cost Appraisal

Capital

11.39 The capital cost of this option has been prepared following the process outlined in part A of this report and has been positively impacted by :

- The reduced programme possible due to a single construction phase on an unoccupied site
- A single commissioning and decant phase on completion

Cost element	Cost £000
Works Costs	£219,501
Fees	£30,730
Off-site highways improvements	£1,736
Other non-works costs	£6,298
Equipment	£21,343
Contingency & optimism Bias	£61,793
Inflation	£85,432
Total	**£426,833**

Table 36: Option E capital cost appraisal

Revenue variances

11.40 The revenue cost variances from the current baseline premises costs have been established following the process set out in part A.

FM Service	Revenue Variance
Estates	-£1,478,387
Housekeeping	£455,762
Portering	£238,689
Energy & utilities	£623,372
Total	**£-160,565**

Table 37: Option E revenue cost appraisal

Acquisition, disposal and development cost

11.41 The general charges and receipts associated with all sites are set out in Appendix 20 of this report. In the context of this option the following costs and receipts are anticipated:

Site	Treatment	Cost £000	Receipt £000
None	Acquisition	Commercially sensitive	Nil
Total		Commercially sensitive	Nil

Table 38: Option E acquisition, disposal and development costs

Programme

11.42 The overall delivery programme for Option E is 6 years and 8 months as illustrated below.

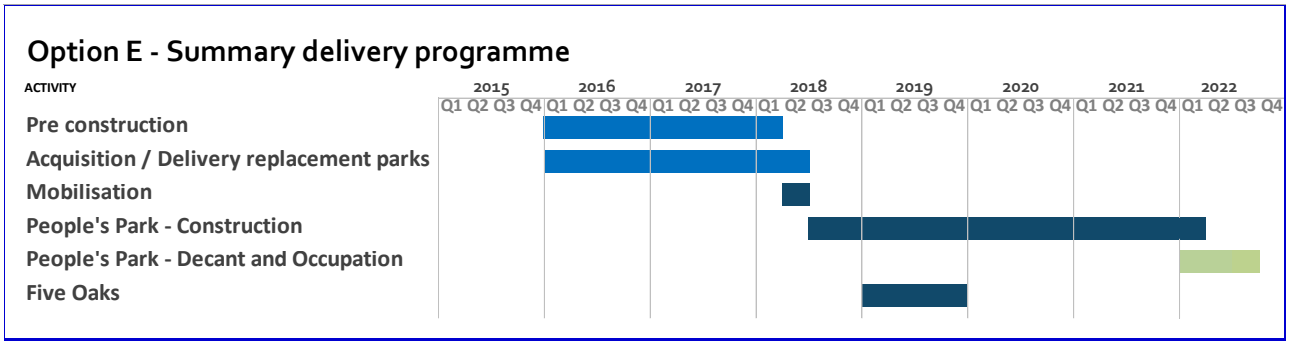

Figure 13: Option E summary delivery programme

Optimism Bias

11.43 Optimism Bias has been calculated using a UK Treasury model. This records the extent of mitigation achieved against a standard data set project and contract risk and from this, derives the overall level of optimism bias to be applied.

11.44 The modelled outcome for this option is included at Appendix 18 and requires the application of an 11% optimism bias to the projects capital cost.

Residual risk register

11.45 The residual Risk Register to be met by contingency and optimism bias allowance is included within Appendix 23.

Conclusions

11.46 The following key conclusions can be drawn from the above:

- The option offers a very good prospect for delivering best practice clinical adjacencies and hospital planning with restrictions being largely associated with the positioning of hospital entrances due to road access;
- The single phase development on an unfettered site results in a very short build programme of less than 7 years;
- Opportunity exists to provide architecture that complements its surroundings and enables what will be a large building to sit comfortably on the periphery of the town centre.
- The option's offers excellent future proofing through equally robust horizontal and vertical flexibility strategies.
- The option has the potential to support good connectivity with the town centre whilst at the same time maximising highway access across the current road network

12 Part C – Findings

Overview

12.1 The site analysis and high level planning completed to date indicates clearly that each site option will support the development of alternative new hospital facilities. However, the cost and timescale for delivery for each site option and potential benefits available across them are vastly different.

12.2 In each case the site conditions and location have varying impacts upon the quality of the solutions and potentially the extent of health gain that each option would eventually support.

12.3 To minimise this effect the developed solution at each location has been based upon a common spatial standard and contemporary UK health guidance on hospital design, planning and layout.

12.4 Each solution has also been informed by the Acute Service Plans currently being developed for each function within the hospital and reflect, as far as is possible at this stage, current thinking on future needs and operational efficiency.

12.5 The effect of the above, has been to inform solutions that respond individually to each site and in doing so result in different building forms and include different departmental adjacencies.

12.6 Given these different outcomes and, to support effective, transparent decision making by Ministers, the findings for each option have been evaluated in the context of their overall cost, benefits and risk by applying UK Treasury best practice option appraisal techniques. These include:

- Calculation of the financial impact of each option's delivery cost and long term running cost over a standard life of 60 years by calculating Net Present Values;
- Establishing the potential benefits and risks associated with each option in terms of its delivery effect on ongoing hospital operations through an independent benefits appraisal using criteria and weightings approved by the Project Board; and
- Illustrating the potential value of one option over another by establishing the net present value cost of achieving each options qualitative benefits.

Site Capacity

12.7 Initial heath planning and departmental adjacency planning have confirmed that all four options are capable of supporting the minimum provision of circa 20,000m² (+ or – 10%) at site level..

12.8 At sloping sites such as Overdale this may require some additional transitions to manage the effect of the site however this may be avoidable through detailed design.

12.9 The combined shape and slope at Overdale also results in an increase in the amount of general hospital communication corridor space required to link together departments that are inevitably further apart.

12.10 A similar effect is evident at Jersey General within Option A where the implications of retaining some existing accommodation either as refurbished or in its existing form results in an increased level of communication corridor space.

12.11 This is however markedly improved within Option C and more so in options D and E due to their being increasingly unrestricted sites.

Programme implications

12.12 Both Option A and Option C have extended programmes due to the number of phases required to allow enough hospital space to be vacated for the next element of construction work to be completed. Both of these options are considered to be undeliverable within the 10 year programme limit imposed by the Project Board.

12.13 Options B, D and E are single phase developments where all construction work can be planned and delivered as a single homogeneous phase of construction. This improves buildability and enables each option to be delivered well within the 10 year limit.

12.14 In summary each option can be delivered in the following timescales:

Site Option		Timeframe
Option A	Existing General Hospital and Overdale – New Build and Refurbishment	11 years 5 months
Option B	Overdale Hospital 100% New Build	6 years 8 months
Option C	Jersey General 100% New build	11 years 5 months
Option D	Waterfront 100: New build	6 years 8 months
Option E	Peoples Park 100% New Build	6 years 8 months

Table 39: Option delivery timeframes

Site flexibility and futureproofing

12.15 Consistent with UK health planning practice it is anticipated that the approach to futureproofing hospital design and capacity will be based upon the following expansion strategies:

- **Internal flexibility** - positioning re-locatable activities on the perimeter of more fixed functions so that they can expand if needed by displacing the re-locatable activities;
- **External flexibility** – identifying key 'zones' at each site into which the hospital could expand if needed. These would be positioned in key locations to recognise those hospital functions most likely to change in future.

12.16 High level site planning has confirmed that each site has sufficient space to allow these strategies to be implemented. Expansion zones have been identified at each location and in some cases such as the Waterfront will require the use of vertical expansion as well. These are set out in Appendix 31.

Cost outcomes

12.17 The full methodology has been assured by an EY assurance team and is described in detail within the Costing Methodology set out in Appendix 15. The results are expressed as Net Present Values for each option below and include:

- Acquisition, disposal / opportunity cost and capital costs of all construction and delivery works
- Lifecycle cost set over a defined 60 year hospital depreciation period
- A forecast of all operational costs

Option A - NPV [£m]	Option B - NPV [£m]	Option C - NPV [£m]	Option D - NPV [£m]	Option E - NPV [£m]
4,092	3,971	4,054	4,002	3,938

Table 40: Option Net Present Values (includes capital and all operational costs)

12.18 From the above it can be concluded that Option E being a 100% new build at People's Park delivers the lowest long term cost solution.

Benefit and Risk Appraisal

12.19 The qualitative value of each option was considered by an independent team of evaluators drawn from team members and on-island representatives using a UK Treasury guidance compliant benefits and risk review process.

12.20 This process was led by an independent Gleeds Facilitator and for consistency with previous reports adopted broadly the same benefits and risk evaluation criteria. Specific Criteria weightings were developed by the Project Team and subsequently endorsed by the Project Board.

12.21 The full methodology has been assured by an EY assurance team and is described in detail within the 'Benefits and Risks Appraisal Methodology' set out in Appendix 22.

12.22 The results expressed as both 'raw' and 'weighted' scores for the considered risks and benefits of each option are:

	Option A	Option B	Option C	Option D	Option E
Raw Benefits score	49	63	79	106	117
Weighted Benefits score	1.69	2.30	2.76	3.77	4.20
Raw Risk score	237	207	203	94	114
Weighted Risk score	9.94	8.68	8.24	3.06	3.58
Option Ranking					
By weighted Benefits	5	4	3	2	1
By Weighted Risk	5	4	3	1	2
Differential over 'Do Minimum'					
Benefits differential	-	26.48%	38.82%	55.22%	59.74%
Risk differential	-	-14.5%	-20.6%	-225.1%	-177.2%

Table 41: Relative benefit and risk assessment

12.23 From the above it can be seen that Option E being the 100% New Build at the People's Park offers the greatest level of benefit whilst Option D at the Waterfront and presents the lowest level of project risk.

12.24 This remains the case in circumstances of delay where option E continues to out-perform the next best Option

12.25 It is also clear from the differentials that the outcome is robust requiring a significant change in weighted benefit or risk scores to change this outcome.

Value for Money Assessment

12.26 In making value based decisions Treasury Guidance recognises the value and usefulness of monetising qualitative scores to establish a clearer basis for understanding the relationship between project cost and the evaluated benefits / risks.

12.27 This is achieved by calculating the Net Present Cost of the benefit associated with each option as set out below:

	Option A	Option B	Option C	Option D	Option E
Option NPV (£m)	4,092	3,971	4,054	4,002	3,938
NPV per weighted benefit point (£m)	2,421.4	1,727.4	1,467.4	1,060.4	938.3
Ranking	5	4	3	2	1

Table 42: Value for Money assessment

12.28 From the above it can be seen that Option E being the 100% New Build at the People's Park offers the lowest cost for each benefit point delivered compared with other options.

Switching points

12.29 Using the above findings further analysis has been completed to establish the extent by which the results for each option would need to change to enable it to be considered as the Preferred Option.

12.30 The findings are set out in the table below and indicate that:

- In NPV terms Option E is the Preferred Option and would not be replaced without a 1.59% reduction in the NPV of Option D being the nearest Option;
- In weighted Benefit terms Option E is the Preferred Option and would not be replaced without a 11.03% increase in the benefits of Option D being the nearest Option;
- In weighted risk terms Option D is the Preferred Option and would not be replaced without a 14.90% reduction in the risk associated with Option E being the nearest Option.

	Option A	Option B	Option C	Option D	Option E
NPV Switching Point					
Option Net Present Value [NPV £m]	4,092	3,971	4,054	4,002	3,938
% Reduction required for other options to be best	3.75%	0.81%	2.84%	1.59%	--
Revised NPV	3,938	3,938	3,938	3,938	--
Weighted benefit Switching point					
Weighted Benefits score	1.69	2.30	2.76	3.77	4.20
% Increase required for other options to be best	147.95%	82.29%	51.68%	11.03%	--
Revised benefit score	4.19	4.19	4.19	4.19	--
Weighted risk Switching point					
Weighted Risk score	9.94	8.68	8.24	3.06	3.58
% Reduction required for other options to be best	-69.30%	-64.85%	-62.97%	--	-14.90%
Revised Risk score	3.05	3.05	3.05	3.06	3.05
NPV reduction required to switch based on NPV/weighted Benefit					
NPV/Weighted Benefit Point	2,421.4	1,727.4	1,467.4	1,060.4	938.3
% NPV Reduction for other options to be best	61.2%	45.7%	36.1%	11.5%	--
Revised NPV/Benefit Point	938.33	938.33	938.33	938.33	938.34
Benefit increase required to switch based on NPV/weighted Benefit					
NPV/Weighted Benefit Point	2,421.4	1,727.4	1,467.4	1,060.4	938.3
% Benefit increase for other options to be best	258.1%	184.1%	156.4%	113.0%	--
Revised NPV/Benefit point	938.33	938.33	938.33	938.33	938.34

Table 43: Switching point analysis

Sensitivity Analysis

12.31 UK Treasury guidance recommends that a sensitivity analysis is completed to establish the extent to which evaluation findings are susceptible to changes in either key project assumptions or other extent parameters.

12.32 This is particularly important where the findings between options are marginal and therefore where the extent of change needed to vary the outcome of an evaluation is small.

12.33 In evaluating the robustness of these findings the project has therefore undertaken a sensitivity analysis for each option based on a number of parameters instructed by the Project Board.

12.34 These are set out in the table below and have been verified by the EY assurance team. They reflect the escalating effect of sensitivity changes on the currently best scoring Option E.

		Cumulative Sensitivity effect					
Considered Sensitivities		**Option A**	**Option B**	**Option C**	**Option D**	**Option E**	**Option E Still Best?**
NPV		4,092	3,971	4,054	4,002	3,938	Yes
NPV / weighted benefit point		2,421.4	1,727.4	1,467.4	1,060.4	938.3	Yes
Sensitivity 1 Loss of income from the Jersey International Finance Centre	NPV	--	--	--	4,134	--	Yes
	NPV / weighted benefit point	--	--	--	1,095	--	Yes
Sensitivity 2 Option C, D & E - reduction in Overdale receipts due to affordable housing	NPV	--	--	4,059	4,007	3,943	Yes
	NPV / weighted benefit point	--	--	1,469	1,062	939	Yes
Sensitivity 3 Option B, D & E - reduction in Jersey General receipts due to affordable housing	NPV	--	3,979	--	4,005	3,941	Yes
	NPV / weighted benefit point	--	1,731	--	1,061	939	Yes
Sensitivity 4 Option B, C, D & E - reduction in Jersey General & Overdale receipts due to affordable housing	NPV	--	3,979	4,059	4,010	3,946	Yes
	NPV / weighted benefit point	--	1,731	1,469	1,063	940	Yes

		Cumulative Sensitivity effect					
Considered Sensitivities		**Option A**	**Option B**	**Option C**	**Option D**	**Option E**	**Option E Still Best?**
Sensitivity 5 Option D - lost Tax Receipts and GVA from JIFC	NPV	--	--	--	5,209	--	Yes
	NPV / weighted benefit point	--	--	--	1,380	--	Yes
Sensitivity 6 Option D & E - Additional Car Parking - 540 Spaces	NPV	--	--	--	4,010	3,946	Yes
	NPV / weighted benefit point	--	--	--	1,063	940	Yes
Sensitivity 7 Option D & E - 1 year capex delay	Capital cost increase				+11.8	+10.8	Yes
	NPV	--	--	--	4,013	3,948	Yes
	NPV / weighted benefit point	--	--	--	1,063	941	Yes
Sensitivity 8 Option D & E - 2 year capex delay	Capital cost increase				+23.7	+21.5	Yes
	NPV	--	--	--	4,024	3,958	Yes
	NPV / weighted benefit point	--	--	--	1,066	943	Yes
Sensitivity 9 Option A - E - worst case combo	NPV	--	3,979	4,059	5,247	3,973	Yes
	NPV / weighted benefit point	--	1,731	1,469	1,390	947	Yes

Table 44: Sensitivity Analysis

Impact of Project delay

12.35 It is clear from the scale of capital expenditure contemplated within any option that the impact of a project delay, for any reason, will be significant. Rudimentary sensitivity testing results for one and two year delays have been included as sensitivities 7 and 8 within table 44 and indicate that a change in capital cost is the most meaningful measure of delay impact.

12.36 This specific impact for option ‘E’ and the next best option ‘D’ are repeated overleaf:

	Option A	Option B	Option C	Option D	Option E	Option E ranking
Option Capital Cost £m	504	445	630	471	427	1
Additional Capital cost as a result of a 1 year delay	n/a	n/a	n/a	**+11**	**+12**	1
Additional Capital cost as a result of a 2 year delay	n/a	n/a	n/a	**+23**	**+22**	1

Table 45: Impact of project delay

12.37 These additional capital costs relate only to the construction costs associated with options D and E and do not take into consideration any additional capital expenditure required at the existing hospital to maintain services and building fabric during these delay periods.

Conclusion and Recommendations

12.38 The above analysis indicates that the Preferred Option emerging from the benefits and risk analysis is Option E being People's Park which offers the lowest NPV and delivers significantly greater value in comparison to other options in cost benefit terms.

12.39 It is also clear from the above that in the worst case where all sensitivity elements occur then the preferred option would remain as Option E being 100% New Build at People's Park.

12.40 The option is also considered to be the most robust as, again in cost benefit terms, it would take a significant change in the benefit / risk or NPV of its nearest option to replace it.

12.41 On this basis Option E being 100% new build at People's Park is considered to be the Preferred Option.

12.42 As a result of the above it is recommended that this option proceeds to detailed design so that:

- The detailed departmental design can be undertaken alongside the completion of the Acute Services Strategy and service delivery plans. This will ensure that design and clinical service planning are fully integrated;
- High level benefits can be developed into a full costed benefit delivery plan enabling it to be managed by the hospital as part of the delivery process. This will reflect the benefits realisation

expectations of the Outline and Full Business case guidance and will enable the hospital to accurately quantify and manage the delivery of planned quality benefits and revenue savings;

- Detailed construction risk appraisal can be completed to develop and improve the mitigation measures needed to optimise the design. This will also allow Optimism Bias provisions to be revisited and potentially reduce the overall capital cost of the project;
- Delay in the delivery of pre-construction work and consequential inflation is avoided.
- The status of Option E as the best performing site is retested once the final cost of the acquisition of People's Park is known.

13 Part D – Rejected variant proposals

13.1 The proposed solutions outlined and evaluated in Part B of this report were developed by the technical team following a review of a number of possible solutions at each of the proposed sites.

13.2 These were developed to the extent where their relative merits and risks could be assessed to the extent needed to be able to identify both their viability and their potential to deliver high quality cost effective solutions.

13.3 A summary of the considered options is set out below with drawn details included in appendix 32

Option A

13.4 A further comparable option to that previously developed within the Strategic Outline Case addendum as developed in an attempt to improve the phasing of the project and its overall deliverability.

13.5 This option was reviewed and proved to be more complex and technically challenging that the initial Strategic Outline Case scheme involving difficult decanting requirements that could not be resolved.

13.6 As such this option was not progressed.

Option B

13.7 The layout and configuration of Overdale presented significant difficulty in developing a hospital with a coherent functionally effective form. As such the design effort within this option focused on developing alternative massing proposals that made best use of the available site whilst still achieving good functional relationships.

13.8 A number of prospective solutions were considered and abandoned due to various combinations of the following outcomes:

- Poor architectural quality due to the compromises required in dealing with site conditions
- Concerns about overlooking at site boundaries and neighbourhood impact
- Sensitivity of location of the emergency department
- Conflict with other properties such as William Knott, Poplars and Thorpe Cottage

Option C – extended site encompassing Lewis Street

13.9 This option considered expanding the existing site further by the acquisition of additional properties adjoining Lewis Street. The principle benefits anticipated were:

- The prospect of reduced development height by having an increased site footprint
- The ability to increase the scale of construction and to improve the programme by reducing the number of phases involved
- The ability to reduce further the impact of the development on the existing hospital

13.10 This option was tested through high level design and the preparation of phasing plans to capitalise on the construction footprint that would become available. Property valuations were secured through BNP Paribas and are included in their report in Appendix 20.

13.11 These investigations revealed that this option was not viable and was subsequently rejected for the following reasons:

- The additional programme benefits could not be realised due to the need to maintain connectivity with the existing hospital during the construction period;
- The valuation of the Lewis Street properties damaged the value for money prospects of the options; and
- The planning risk associated with the acquisition of the Lewis Street properties was considered to be high and would compromise its overall deliverability in the required timeframe.

Option D

13.12 Two additional variant options were considered involving:

- The development of different architectural massing to improve the use of the available site;
- The redirection of the dual carriageway to increase the capacity of the site and to improve its connectivity with the town centre.

13.13 In each instance the views of our planning advisor suggested that the massing proposals were not in keeping with the context of the existing waterfront and also that moving the carriageway was both costly and would compromise the planned Jersey International Finance Centre development.

13.14 As a result neither option was developed any further.

14 Appendices Schedule

No.	Content
1	**States of Jersey CR004 Brief** – setting out the deliverables expected from this change order
2	**Verification of previous site deselection** – review outcome confirming status of previous site rejections
3	**Site Boundary 'Red Line' Plans** - indicating the extent of each site owned by the States of Jersey and those additional sites that would be required to implement each option
4	**Site Appraisal Plans** – Annotated Aerial plans and site engineering drawings illustrating key site features and points of significance
5	**Local infrastructure / transport assessment** – drawings and plans setting out the transport infrastructure in place in the immediate vicinity or relevant to each validated site. Technical note indicating research and assessment undertaken in relation to transport improvement.
6	**Technical Site Appraisals** –Technical notes indicating research and assessments undertaken for each site in respect of multi-disciplinary engineering services
7	**Town Planning Assessment** – narrative assessment of each site in respect of town planning considerations
8	**Functional Area Estimates** - target and 'as drawn' area summary for dual and single site options including proposed area reduction strategy and spatial assumptions
9	**States of Jersey relevant activity data** – provided to verify the appropriateness of health planning assumptions
10	**Proposed health planning and stacking diagrams** – setting out the adjacency preferences of each option and the function stacking achieved in each proposal
11	**Proposed Site Massing Proposals** – site block plans of each proposal supported by 2D and 3D illustrations
12	**Proposed Site engineering plans** – site engineering and infrastructure plans
13	**Proposed Construction Programme** – overview of construction approach, decant strategy and Programmes for each option
14	**Proposed Construction Phasing** – drawing sequence setting out the phases in which each solution will be delivered
15	**Capital cost Pricing** - Methodology and price book for each option including cashflow, abnormals and lifecycle
16	**Inflation Methodology** – Gleeds technical review of the inflation applicable to all options
17	**Location Factor estimate** – Gleeds technical review of the Location factor applicable to all options
18	**Optimism Bias methodology and outcomes** – notes and scores from the Gleeds Optimism Bias modelling
19	**Investment Summary** – GEM model pricing summary for each Option

STATES OF JERSEY

FUTURE HOSPITAL PROJECT

CHANGE REQUEST NR. 21

No.	Content
20	**Site Valuations** – site valuation advice received from various professional sources or referenced where drawn from previously completed reports
21	**Site Reuse proposals** – setting out the possible reuse options for each disposed site
22	**Benefits and Risk Analysis** – Process and Evaluation outcomes
23	**Residual Risk Registers** – setting out the remaining unmitigated risks for each proposed site option
24	**EY assurance outcomes** – assurance commentaries and reports following the review of Gleeds processes
25	**Design Champion report** – commentary verifying the design champion's opinion on the proposed solutions
26	**Clinical Assurance** – letters of acceptance and other commentaries provided by Hospital MD & Clinical Lead
27	**Other assurances** – responses received from other parties in response to direct and indirect consultation
28	**Data book** - summary schedule of all data sources used in the completion of the site validation exercise
29	**Schedule of Enquiries** – copies of all enquires raised and responses received
30	**Development log** – Record of correspondence and responses to SOJ commentary, including items for development at a later date
31	**Future flexibility –** setting out future flexibility / expansion possibilities of each site
32	**Discounted variants –** setting out variants explored and discounted