



gleeds<sup>G</sup>

JERSEY FUTURE HOSPITAL  
PROJECT  
CHANGE REQUEST NO 4

SITE OPTIONS APPRAISAL

APRIL 2015

QUALITY ASSURANCE

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## VERSION CONTROL

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0.3	30th March 2015	Consolidated draft of TA team content issued to NA for comment	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
COM	The Council of Ministers of the States of Jersey
Contracting Authority	The States of Jersey
CPI	Consumer Price Index
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 Previously published by the UK Department of Health, now superseded by HPCGs.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

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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

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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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### **3 Executive Summary**

- 3.1 This Site Options Appraisal has been undertaken by Gleeds as the Lead Advisor to the Future Hospital project in response to a request by the Project Board to review the viability of four site options proposed by Ministers.
- 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 The full review methodology and process have been independently assured by EY (Ernst Young) and verified as being broadly robust and valid. A report on the outcome will follow completion of this Report.
- 3.4 The economic modelling of all outcomes has been completed using a UK Treasury General Economic Model [GEM] that has been managed by EY and again assured by an independent EY Team.
- 3.5 The four options considered were:
- Option A – Dual Site (Existing General Hospital and Overdale) – New Build and Refurbishment Option
  - Option B - Overdale Site and adjacent property – 100% New Build Option
  - Option C - Existing General Hospital Site and adjacent property – 100% New Build Option
  - Option D - Waterfront Site - (14C Zephyrus, Crosslands and Jardins de la Mer) – 100% New Build Option
- 3.6 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 within all options has been based on achieving a 15% reduction against current UK health building standards.
- 3.7 On this basis the appraisal concluded that:
- Option 'B' being a 100% new hospital at Overdale would be delivered at the lowest capital cost £436.5m, carried 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 'D' being a 100% new hospital at the Waterfront would be delivered at the second lowest capital cost of £463.3m, carried the second lowest Net Present Value and could also be delivered within 7 years;

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- Option 'D' scored significantly higher than all other options in terms of delivered benefits and scored the lowest and therefore best in terms of the risks associated with it.
- Option 'A' being the dual site option ranked the poorest in terms of potential benefits and risk and also in terms of overall cost due to the length of programme required to deliver it on an operational hospital site.

3.8 UK Treasury Green Book 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 'D' being the Waterfront scored significantly better than all other options and continued to do so under several levels of sensitivity testing.

	<b>Option A</b>	<b>Rank</b>	<b>Option B</b>	<b>Rank</b>	<b>Option C</b>	<b>Rank</b>	<b>Option D</b>	<b>Rank</b>
Capital Cost [£m]	420.8/ (497.1)	1/(3)	436.5	2/(1)	626.0	4	463.3	3/(2)
Delivery period (from Q2 2015)	11 years, 5 months		6 years, 6 months		11 years, 4 months		6 years, 6 months	
60 Year NPV [£m]	4,110	4	3,955	1	4,052	3	3,988	2
Raw Risk Score	237		207		203		94	
Weighted Risk Score	9.94	4	8.68	3	8.24	2	3.06	1
Raw Benefits Score	47		54		76		93	
Weighted Benefits score	1.69	4	2.30	3	2.76	2	3.77	1
VFM measure – NPV/weighted benefit	2.432.05	4	1,720.52	3	1,466.87	2	1,056.71	1

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

3.9 On the basis of the evidence established within the report it is clear that Option 'D' is the optimal location to be taken forward to detailed design.

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## **4 Introduction**

- 4.1 The renewal of its acute and general hospital services continues to be a key priority for the States of Jersey and remains a cornerstone of the Health and Social Services Departments modernisation agenda. This is because:
- The overall condition of the Hospital continues to deteriorate rapidly leading to increased maintenance expenditure and an increasing risk of catastrophic failure;
  - The general arrangement of buildings at the current Hospital is problematic and the age and condition of key buildings means that best practice standards in many areas cannot be implemented;
  - Modern healthcare processes and efficiency improvements are impractical to adopt within the outdated buildings; and
  - The KPMG Report 'A proposed new system for Health and Social Services (2011)' made it clear that the current hospital was no longer fit for purpose and that replacement would be required by 2020.
- 4.2 These issues have been consistently recognised within the previous reports instructed by Ministers and in Ministers most recent decision to further test previous findings through this 'Site Validation exercise'.
- 4.3 In arriving at this decision Ministers had previously considered a pre-feasibility Spatial Assessment Project study and Strategic Outline Case which was completed by WS Atkins between June 2012 and May 2013.
- 4.4 Ministers with the oversight of Health Transformation were charged with reviewing these reports and in subsequently establishing a preferred site for the new hospital. They concluded at that time that the preferred solution was a phased redevelopment and expansion of the existing Hospital.
- 4.5 A parallel review of hospital funding options and of overall affordability was also undertaken by the States of Jersey Treasury to develop both a funding envelope for the project and a funding strategy to pay for it.
- 4.6 Ministerial recommendations following their review of the Pre-Feasibility Study and Strategic Outline Case and the proposed funding strategy were considered by the Ministerial Oversight Group on 18th June 2013.

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- 4.7 Ministers subsequently instructed the preparation of a further 'refined proposal' to develop a solution that was based upon Ministers recommendations and the findings of the Pre-Feasibility Strategic Outline Case, but that could also be delivered within the funds available.
- 4.8 This Refined Concept Addendum to the Strategic Outline Case was completed by WS Atkins by October 2013 and proposed an alternative 'dual site' option involving the renewal of some services at the existing Jersey General Hospital and the relocation of other services to new facilities to be constructed at Overdale.
- 4.9 On the 17th September 2014 the Ministerial Oversight Group considered the outcome of the Health Social Services and Housing Scrutiny Panel's (HSSH) Review of the Transformation of Health Services (SR.10/2014). Ministers concluded that in view of the scale of the project, a stand-alone Report and Proposition on the Future Hospital was in the best interests of transparent and open Government.
- 4.10 The Project Board at special meetings attended by the Chief Executive Officer of the States of Jersey on 24th September and 22nd October 2014, subsequently determined that a further Site Validation Exercise should be undertaken to specifically address Recommendation 12 of SR.10/2014.
- 4.11 The Chief Executive and Chief Officers subsequently proposed the following options:
- 100% new build hospital at Overdale Hospital and adjacent land;
  - 100% new build hospital on the current General Hospital site and adjacent land;
  - 100% new-build hospital on the best performing alternative site identified during the Pre-feasibility being site 14C "the Waterfront"; and
  - 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".
- 4.12 In accepting Recommendation 12 of SR.10/2014, Ministers set a target for lodging a report of the findings of Site validation report by the end of Quarter 2, 2015.
- 4.13 As Lead Advisor within the Jersey Future Hospital project, Gleeds commenced work on this review in January 2015 and have set out our approach and conclusions within this report.

### **Reaffirmation of previously rejected sites**

- 4.14 The options selected for review within this site validation exercise were based upon those options that proved to be viable within the earlier Strategic Outline Case and the Refined Dual Site Concept

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Addendum. However, as a number of clinical practice adjustments have been planned since these reports were received in October 2013, the deselection of other sites within these earlier reports have been further reviewed at this stage.

- 4.15 This is consistent with UK Treasury Green Book guidance and will be helpful in avoiding the re-examination of earlier decisions taken during the preparation of the Outline and Full Business Cases.
- 4.16 The full findings of this review are contained in Appendix 2 and confirms 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**

- 4.17 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 – D.

Option	Budget	Spatial standard	New build element
<b>A - Dual Site - (Existing General Hospital and Overdale) – New Build and Refurbishment Option</b>	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>B - Overdale Hospital Site - and adjacent property – 100% New Build Option</b>	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.
<b>C - Existing General Hospital Site - and adjacent property – 100% New Build Option</b>	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.
<b>D - Waterfront Site - (14C)</b>	Capital: To be determined by Design.	85% of UK NHS Health Building	100% New Build.

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<b>Zephyrus, Crosslands and Jardins de la Mer) – 100% New Build Option</b>	Revenue: Base Acute Service Planning Budget base with interventions determined from any specific costs of dual site operation.	Notes as a target wherever safe and sustainable to do so.	
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Table 2: Options under review

### Confirmation of Key Objectives

4.18 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.

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## **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.



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- 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 [FAEs] for single site solutions (being Options B, C and D) and the dual site solution (being Option A) have therefore been developed by adopting UK best practice and UK Department of Health guidance - 'Health Premises Cost Guides [second edition]'.
- 5.13 The FAEs 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 63,644m<sup>2</sup> estimated for the preferred hospital identified within the previous Strategic Outline Case.

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- 5.14 This is notably larger than the area of the current hospital at 38,863m<sup>2</sup> 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 FAEs 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
<b>Dual site</b>	<b>Option A</b> - (Existing General Hospital and Overdale) – New Build and Refurbishment Option	57,466m <sup>2</sup>
<b>Single site</b>	<b>Option B</b> - Overdale Hospital 100% New Build <b>Option C</b> – Jersey General 100% New build <b>Option D</b> – Waterfront 100: new build	46,841m <sup>2</sup>

Table 3: Functional Area Estimates for each option

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### **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 to the roof as required to work within 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.
- 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. Phasing diagrams have also been developed to show potential stage development and bed number availability. Stacking and Massing Proposals are provided in Appendices 10 and 11 respectively, Phasing diagrams are provided in Appendix 14.

### **Site analysis to identify best fit, massing and flexibility**

- 5.24 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.

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- 5.25 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.
- 5.26 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**

- 5.27 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);
- 5.28 A summary of the data and other reference sources used in arriving at these conclusions is attached as Appendix 28.

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### **Cost Appraisal – General**

- 5.29 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.
- 5.30 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**

- 5.31 The expectations for Option A are different to those for Options B, C and D. 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 3<sup>rd</sup> October 2013 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.
- 5.32 A high level review indicates that the cost of the uplifted scheme would be £420.75m based upon previously assumed Optimism Bias assumptions. Revisions to the UK HM Treasury Guidance for optimism bias suggest that a higher cost should be included for planning purposes so this updated guidance has been included for all Options developed under this Site Options Appraisal.

### **Capital Costs**

- 5.33 The individual capital costs for each option have been developed incrementally by:
- Establishing indexed works cost estimates 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 costs for each option;
  - Calculating any further inflation provisions by using each option's proposed delivery programme to establish a cashflow profile; and
  - Identifying the Lifecycle cost expectations for each option using BCIS reference data modelled over a UK Treasury Guidance building planning life of 60 years. In the case of Option A this

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includes a further refurbishment at year 30 to reflect the shorter 30 year life expectancy of refurbished accommodation.

### **Revenue costs**

- 5.34 To maintain consistency with previous modelling techniques used within the previously published SOC [WS Atkins 2013] a variance model has been adopted. Here only those costs considered to vary from the operational costs of the existing hospital are identified.
- 5.35 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.
- 5.36 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.
- 5.37 A summary of the confirmed variances for each option are set out within Part C of this report.
- 5.38 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**

- 5.39 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.
- 5.40 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**

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

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- 5.42 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**

- 5.43 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.
- 5.44 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 costs than had been forecast.
- 5.45 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.
- 5.46 Capital costs for each option have been assessed using HPCG guidance based works costs and allowances. These have then been indexed to a 2nd quarter 2015 base date for all options.
- 5.47 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.
- 5.48 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.
- 5.49 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.
- 5.50 Clearly those options with longer programmes will have a greater allowance for inflation as costs will be incurred further into the future.
- 5.51 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.
- 5.52 A summary of the indexation process applied to each element of cost is shown in the table below:

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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**

- 5.53 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.)
- 5.54 The BCIS therefore recommend that standard allowances are adjusted by a 'Location Factor' to reflect these local costs (or savings).
- 5.55 Appendix 17 sets out the methodology we have used for determining the Location Factor for each of the site options under review.
- 5.56 Our assessment is based on a mixture of BCIS data, information from on-island reports and our own research.
- 5.57 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.
- 5.58 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%

Table 5: Location Factor

- 5.59 The differences are reflective of the greater opportunities for increased 'off island' manufacture for Options B and D with a consequent reduction in 'on island' labour costs.



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## Enquiries and consultations

5.60 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.

5.61 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
The Parish of St Helier	25.02.15	Discuss and review appropriate matters of interest
Jersey Water	Ongoing following initial enquiry made 26.06.14	Water pressure, connection and service information
Jersey Electricity	Ongoing following initial enquiry made 26.06.14	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
Transport and Technical Services Department (Transport and Drainage Authority)	Initial enquiry made by telephone 28.01.15	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
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
Jersey Electric	Ongoing following initial enquiry made 26.06.14	Existing utilities supply and future options
Jersey Gas	Ongoing following initial meeting held 15.07.14	Existing utilities supply and future options

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ICT Provider (JT Global)	30.01.15	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

- 5.62 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.
- 5.63 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.
- 5.64 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 17<sup>th</sup> March 2015, included within Appendix 22.
- 5.65 Option evaluation was completed through a formal workshop held on the 26<sup>th</sup> March 2015 facilitated by a Gleeds specialist Risk Manager.
- 5.66 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.
- 5.67 The group included representatives of the Gleeds technical team, on-island advisors, and a HSSD representative.
- 5.68 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.
- 5.69 The Evaluation Groups findings have been used to establish:

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- 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.

5.70 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**

5.71 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.

5.72 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**

5.73 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.

5.74 In each case 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. In each case revised calculations will be prepared during the OBC process.

5.75 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.

5.76 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.

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5.77 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**

5.78 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 have been reserved for key programme activities within which specific States of Jersey approval processes must be observed;
- adequate periods are included for planning determination following consultation with States of Jersey Planning Officers;
- decant periods are pragmatic and, in so far as is possible at this stage, recognise the primary clinical obligations of the hospital over decanting needs; and
- programme durations for design, procurement, construction and occupation are realistic and reflect benchmark construction output data from comparable projects.

5.79 As a consequence 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.

5.80 Each programme assumes that a site selection is made to allow completion of Deliverable 3 Project Brief by 15th June 2015. This will allow the preferred site Feasibility Studies and Option Appraisal Report activities to be completed as previously planned.

### **Project Assurance**

5.81 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.

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

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

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## Redevelopment Opportunities

5.84 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 Option_Residential Development	362 units (185 single, 101 two bedroom and 76 three bedroom units) with associated parking
Waterfront	N/A	Site remains available for use as in current Masterplan for 386 residential and 90 commercial units

Table 7: Redevelopment opportunities

5.85 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 to be selected. Under other options this would not be required and would lead to an increase in redevelopment density.

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

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## 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

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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:

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- 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.



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- 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.

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### **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.

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- 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.

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## 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

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Concept scheme has also been managed as far as is practically possible through the extensive re-use of existing accommodation.

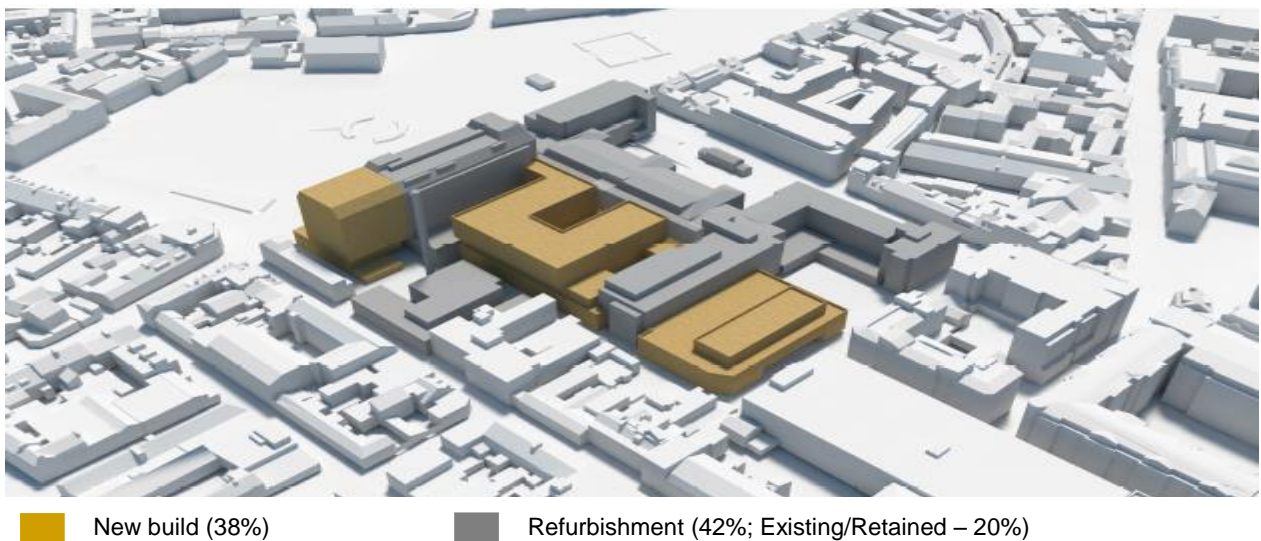


Figure 1: Option A - JGH Proposed Perspective View

- 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.

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- 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.

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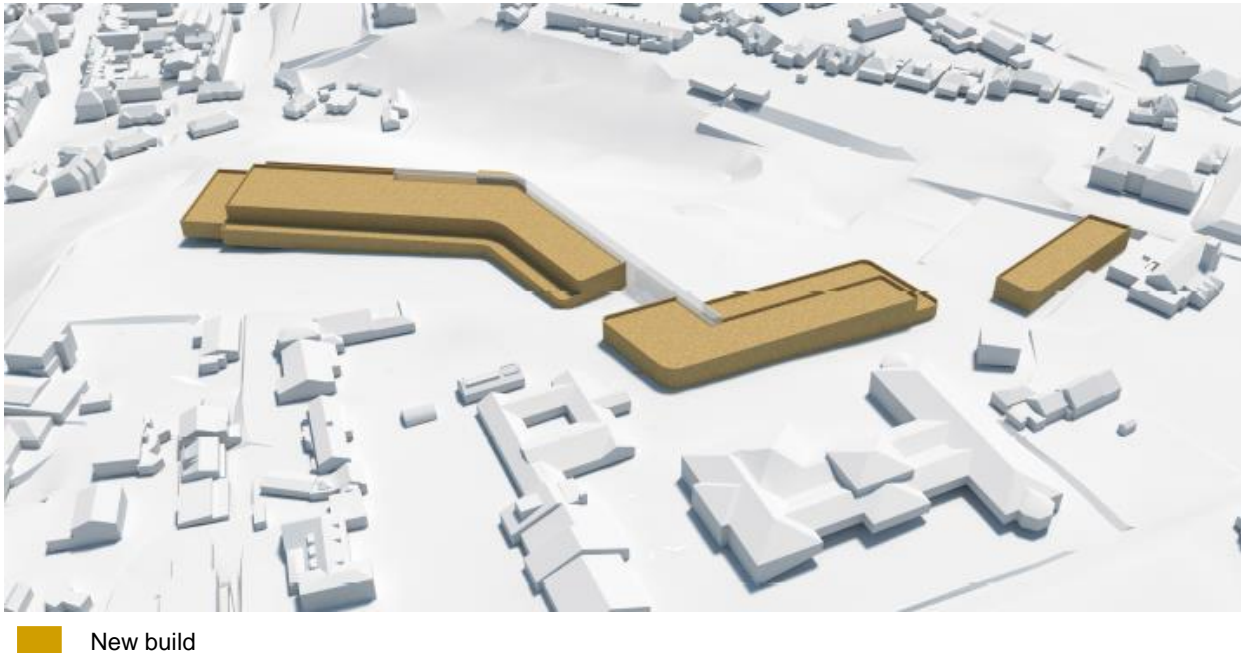


Figure 2: Option A Overdale Proposed Perspective View

- 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.

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- 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



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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

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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,

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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.

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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 <sup>2</sup> combined	10,620m <sup>2</sup>	3,963m <sup>2</sup>
Jersey General		50,789m <sup>2</sup>	

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	Cost £000 Gleeds scheme
Works Costs	£213,162	£209,587
Fees	£34,000	£33,534
Non Works Costs	£7,133	£7,107
Equipment	£18,308	£17,940

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Contingency & optimism Bias [* As SOC and Refined concept]	£42,261*	£102,216
Inflation	£105,836	£125,608
<b>Total</b>	<b>£420,751</b>	<b>£495,992</b>

Table 12: Option A capital cost appraisal

### Revenue

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
<b>Total</b>	<b>£1,357,554</b>

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.

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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.

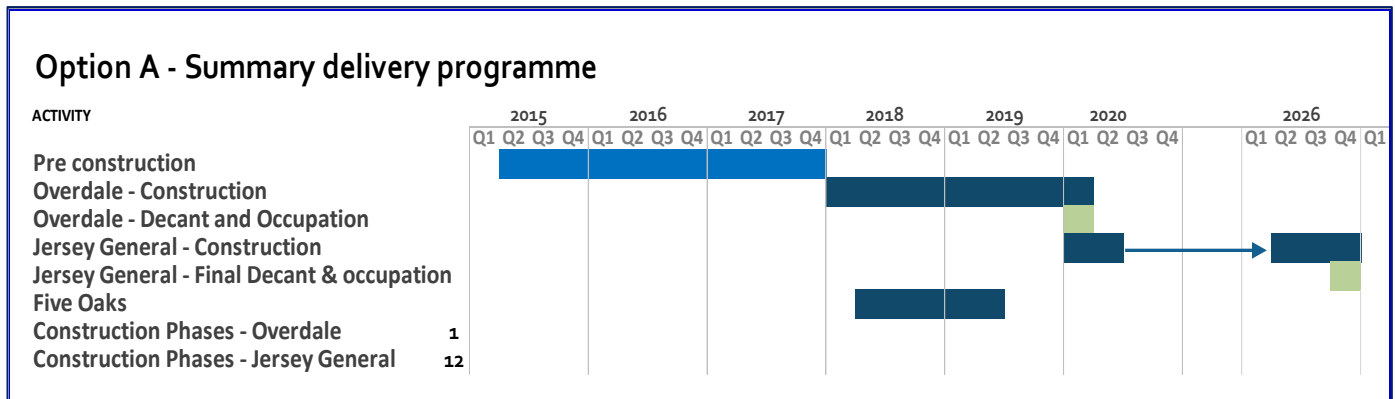


Figure 3: Option A summary delivery programme

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.

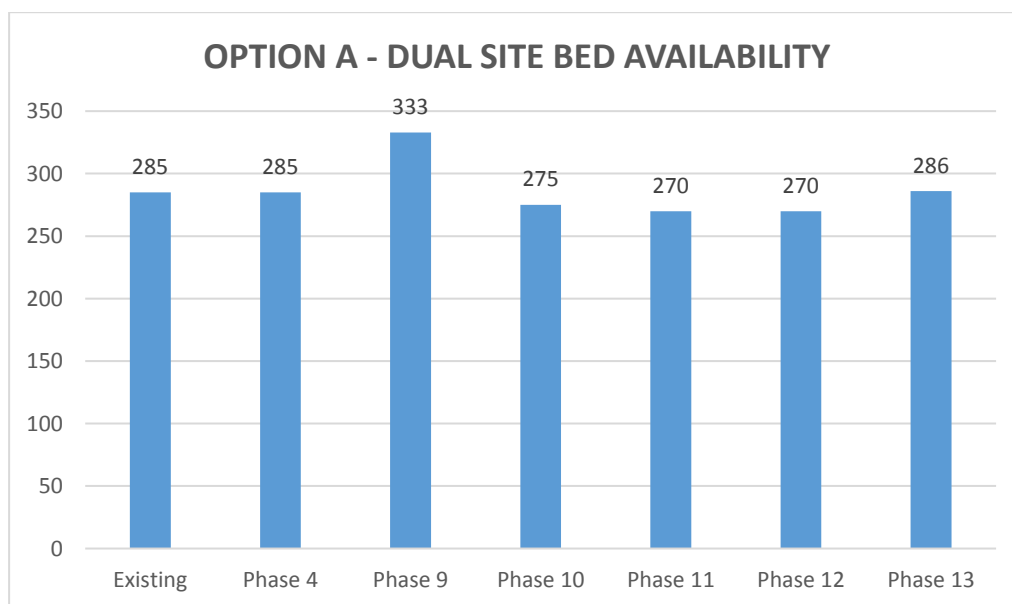


Figure 4: Option A bed availability during construction

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## **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.

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## 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.



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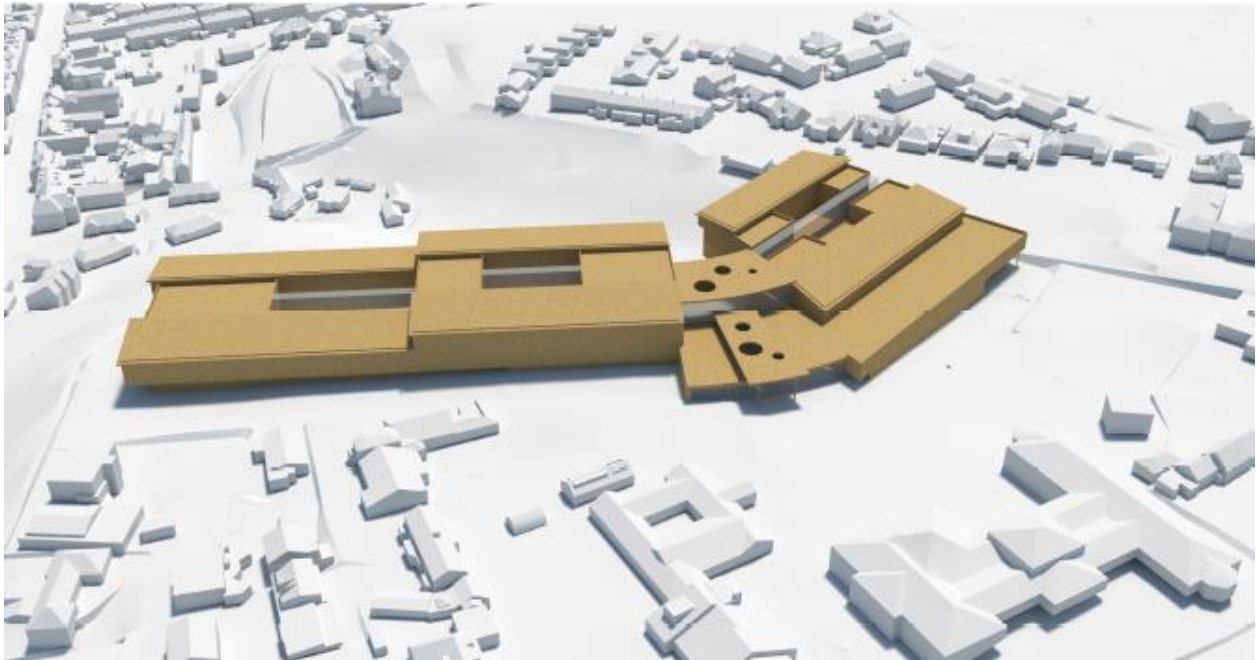


Figure 5: Option B proposed perspective view

- 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.

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- 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.

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- 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.

8.17 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.

8.18 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

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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**

- 8.19 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].
- 8.20 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.
- 8.21 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.
- 8.22 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**

- 8.23 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.
- 8.24 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.
- 8.25 Two separate medical gas plants rooms will be provided with a further bottled storage location to provide full resilience to HTM compliance.
- 8.26 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.

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### Geotechnical proposals

- 8.27 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.
- 8.28 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.
- 8.29 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.
- 8.30 Management and treatment of the invasive Japanese Knotweed plant will be required.
- 8.31 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.
- 8.32 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

- 8.33 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.
- 8.34 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 <sup>2</sup>	49,262m <sup>2</sup>	+2,421m <sup>2</sup>

Table 17: Option B spatial planning outcomes

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## Cost Appraisal

### Capital

8.35 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	£227,797
Fees	£31,892
Non Works Costs	£8,493
Equipment	£21,587
Contingency & Optimism Bias	£67,226
Inflation	£77,383
<b>Total</b>	<b>£434,378</b>

Table 18: Option B capital cost appraisal

### Revenue

8.36 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
<b>Total</b>	<b>-£65,208</b>

Table 19: Option B revenue cost appraisal

### Acquisition, disposal and development costs

8.37 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:

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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**

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

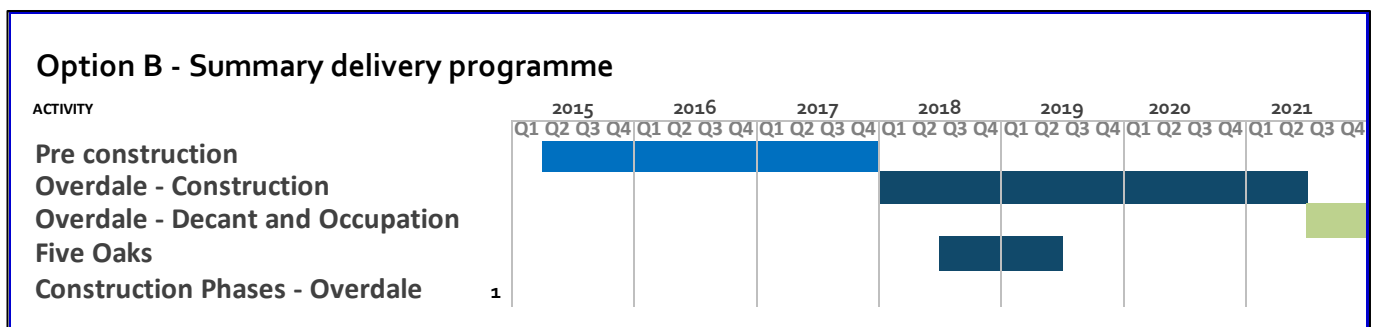


Figure 6: Option B summary delivery programme

**Optimism Bias**

8.39 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.

8.40 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**

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

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## Conclusions

8.42 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.



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## 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.

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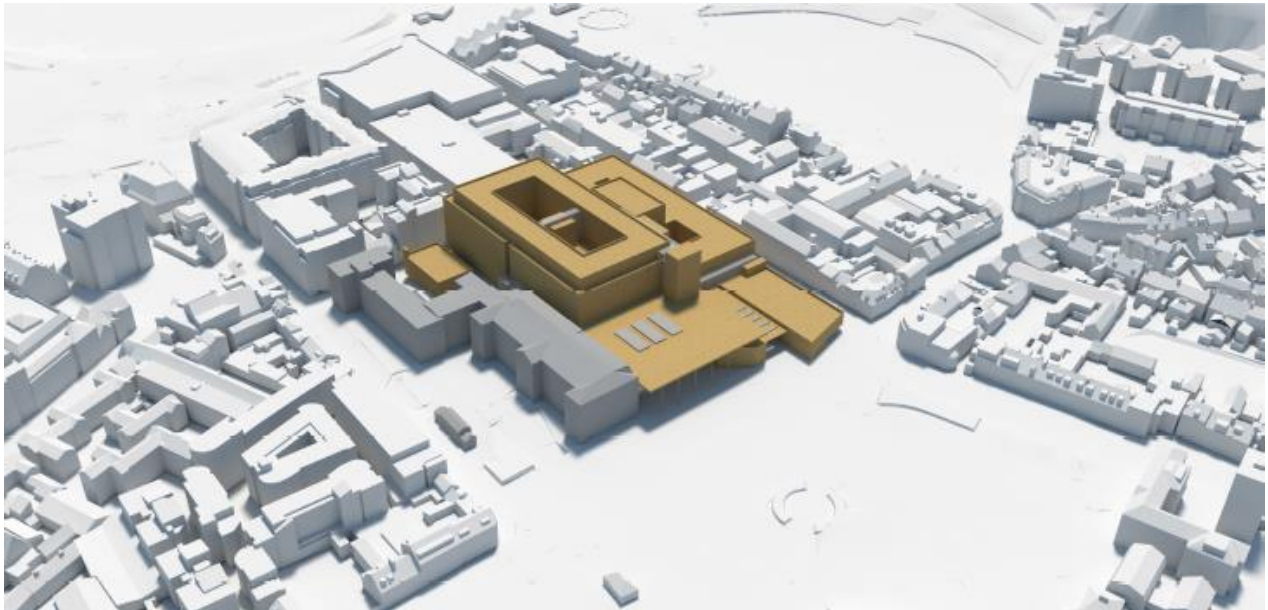


Figure 7: Option C proposed perspective view

- 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.

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- 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.

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- 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.

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### **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 the option of adopting an 'all electric' solution which has not been implemented at this stage.

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### 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 <sup>2</sup>	48,399m <sup>2</sup>	+1,558m <sup>2</sup>

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

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Cost element	Cost £000
Works Costs	£265,305
Fees	£39,796
Non Works Costs	£14,425
Equipment	£21,349
Contingency & optimism Bias	£124,636
Inflation	£153,363
<b>Total</b>	<b>£618,874</b>

Table 24: Option C capital cost appraisal

**Revenue**

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
<b>Total</b>	<b>-£242,182</b>

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
<b>Total</b>		Commercially sensitive	£0

Table 26: Option C acquisition, disposal and development costs

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**Programme**

9.41 The overall delivery programme for Option C is some 10.5 years as illustrated below.

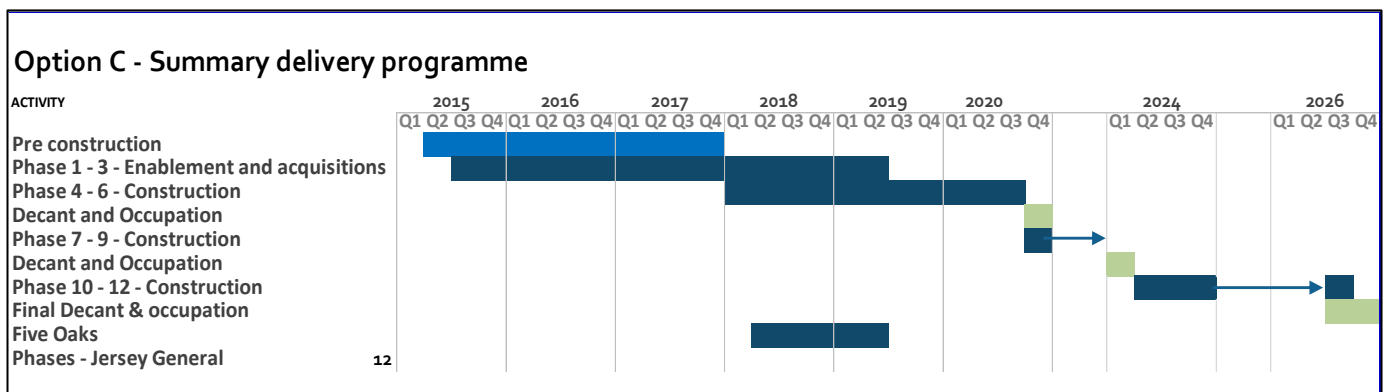


Figure 8: Option C summary delivery programme

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.

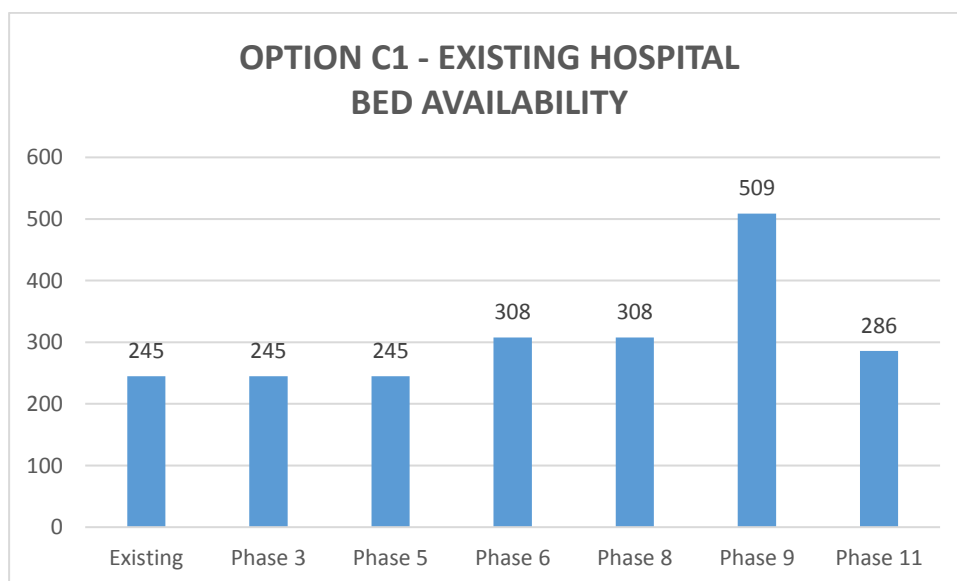


Figure 9: Option C bed capacity during construction



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### **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 11 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.

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## 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.

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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.

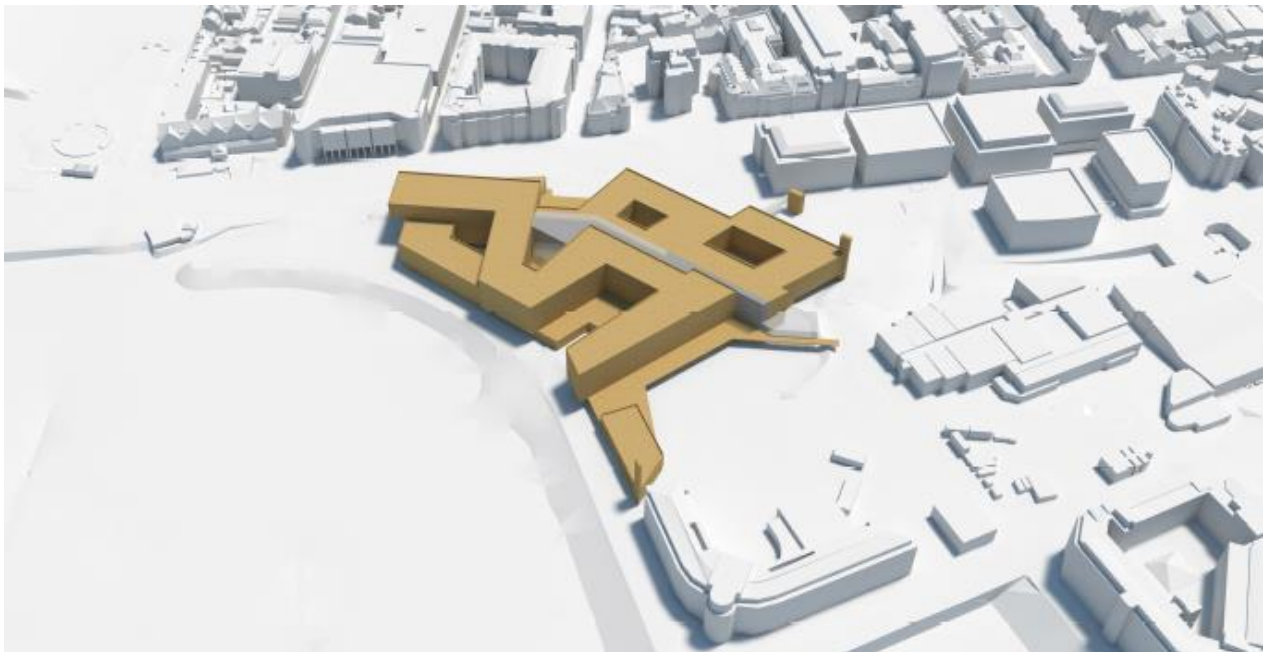


Figure 10: Option D proposed perspective view

- 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.

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- 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).

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- All other traffic will access the site via La Route Du Port Elizabeth and Rue De L'Etai (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'Etai 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'Etai roundabout	Approach widening	Achieve additional queuing capacity
Rue de L'Etai 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.

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### **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.

### **Engineering services**

10.26 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.

10.27 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.

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

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10.29 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**

10.30 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.

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

10.32 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.

10.33 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.

10.34 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).

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

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

### **Achieved Hospital size**

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

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

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

Table 29: Option D spatial planning outcomes

## Cost Appraisal

### Capital

10.39 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	£241,756
Fees	£33,847
Non Works Costs	£13,265
Equipment	£21,729
Contingency & optimism Bias	£68,644
Inflation	£80,088
<b>Total</b>	<b>£463,339</b>

Table 30: Option D capital cost appraisal

### Revenue

10.40 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	-£1,426,905
Housekeeping	£501,201
Portering	£275,016
Energy & utilities	£659,509
<b>Total</b>	<b>£8,821</b>

Table 31: Option D revenue cost appraisal



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### Acquisition, disposal and development cost

10.41 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	£0	£0
Total		£0	£0

Table 32: Option D acquisition, disposal and development costs

### Programme

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

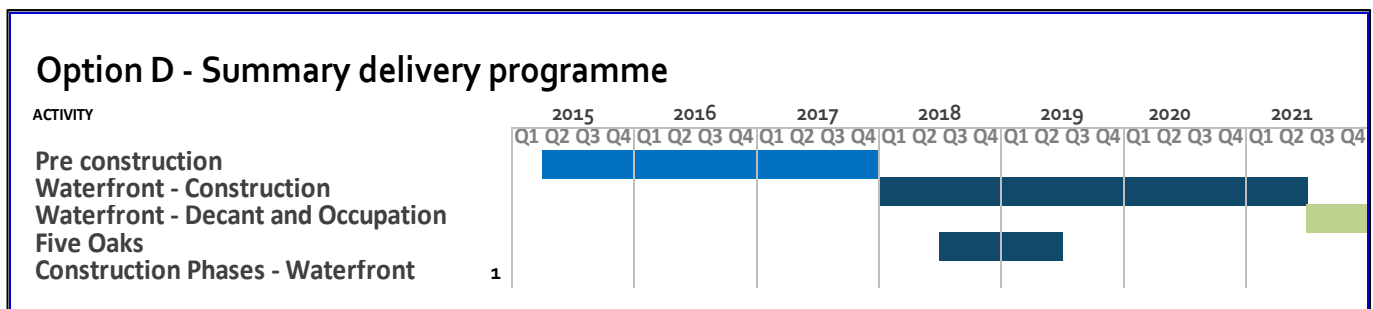


Figure 11: Option D summary delivery programme

### Optimism Bias

10.43 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.

10.44 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

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

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## Conclusions

10.46 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 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.

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## 11 Part C – Findings

### Overview

- 11.1 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 option and potential benefits available across them are vastly different.
- 11.2 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.
- 11.3 To minimise this effect the developed solution at each option has been based upon a common spatial standard and contemporary UK health guidance on hospital design, planning and layout.
- 11.4 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.
- 11.5 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.
- 11.6 Given these different outcomes and to support effective, transparent decision making by Ministers the findings for each option has been evaluated in the context of its 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 on each option in terms of its delivery risk and hospital operational risk by completing an independent benefits appraisal using criteria and weightings approved by the Project Board; and
  - Deducing the relative value of qualitative benefits by establishing the net present cost of each option's benefits to illustrate the potential value of one option over another.

### Site Capacity

- 11.7 Initial health planning and departmental adjacency planning have confirmed that all four options are capable of supporting the minimum provision of circa 20,000m<sup>2</sup> (+ or – 10%) on the ground floor.
- 11.8 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.

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11.9 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.

11.10 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. This is however improved within Options C and D being new construction at both the General Hospital and at the Waterfront.

### **Programme implications**

11.11 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. As such both of these options are considered to be undeliverable within the 10 year programme limit imposed by the Project Board.

### **Site flexibility and futureproofing**

11.12 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.

11.13 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**

11.14 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

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- A forecast of all operational costs

Option A - NPV [£m]	Option B - NPV [£m]	Option C - NPV [£m]	Option D - NPV [£m]
4,110	3,955	4,052	3,988

Table 33: Option Net Present Values (includes capital and all operational costs)

11.15 From the above it can be concluded that Option B being a 100% new build at Overdale delivers the lowest long term cost solution.

### Benefit and Risk Appraisal

11.16 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.

11.17 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.

11.18 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.

11.19 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
Raw Benefits score	47	54	76	93
Weighted Benefits score	1.69	2.30	2.76	3.77
Raw Risk score	237	207	203	94
Weighted Risk score	9.94	8.68	8.24	3.06
<b>Option Ranking</b>				
By weighted Benefits	4	3	2	1
By Weighted Risk	4	3	2	1
<b>Differential over 'Do Minimum'</b>				
Benefits differential	-	26.48%	38.82%	55.22%

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Risk differential	-	-14.5%	-20.6%	-225.1%
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Table 34: Relative benefit and risk assessment

11.20 From the above it can be seen that Option D being the 100% New Build at the Waterfront offers the greatest level of benefit and presents the lowest level of project and long term risk.

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

#### Value for Money Assessment

11.22 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.

11.23 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 NPV	4,110	3,955	4,052	3,988
NPV per weighted benefit point (£m)	2,432	1,721	1,467	1,057
Ranking	4	3	2	1

Table 35: Value for Money assessment

11.24 From the above it can be seen that Option D being the 100% New Build at the Waterfront offers the lowest cost for each benefit point delivered compared with other options.

#### Switching points

11.25 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.

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

- In NPV terms Option B is the Preferred Option and would not be replaced without a 7.07% reduction in the NPV of Option D being the nearest Option

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- In weighted Benefit terms Option D is the Preferred Option but would not be replaced without a 36.84% increase in the benefits of Option C being the nearest Option;
- In weighted risk terms Option D is the Preferred Option and would not be replaced without a 62.9% reduction in the risk associated with Option C being the nearest Option.

	Option A	Option B	Option C	Option D
<b>NPV Switching Point</b>				
Option Net Present Value [NPV £m]	4,110	3,955	4,052	3,988
% Reduction required for other options to be best	21.48%	0.00%	14.16%	7.07%
Revised NPV	404.29	404.30	404.29	404.29
<b>Weighted benefit Switching point</b>				
Weighted Benefits score	1.69	2.30	2.76	3.77
% Increase required for other options to be best	123.69%	64.45%	36.84%	0.00%
Revised benefit score	3.78	3.78	3.78	3.77
<b>Weighted risk Switching point</b>				
Weighted Risk score	9.94	8.68	8.24	3.06
% Reduction required for other options to be best	-69.30%	-64.85%	-62.97%	0.00%
Revised Risk score	3.05	3.05	3.05	3.06

Table 36: Switching point analysis

## Sensitivity Analysis

11.27 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.

11.28 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.

11.29 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.

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11.30 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 D.

		Cumulative Sensitivity effect				
Considered Sensitivities		Option A	Option B	Option C	Option D	Option D Still Best?
NPV		4,110	3,955	4,052	3,988	
NPV / weighted benefit point		2,432.05	1,720.52	1,466.87	1,056.71	Yes
<b>Sensitivity 0</b>	NPV	4,110	3,955	4,052	4,116	
Loss of income from the Jersey International Finance Centre	NPV / weighted benefit point	--	--	--	1,090.74	Yes
<b>Sensitivity 1</b>	NPV	4,110	3,955	4,052	4,129	
Additional inflation due to 1 year planning delay	NPV / weighted benefit point	--	--	--	1,094.19	Yes
<b>Sensitivity 2</b>	NPV	4,110	3,955	4,052	4,137	
Option D – additional £10m underground car park	NPV / weighted benefit point	--	--	--	1,096.41	Yes
<b>Sensitivity 3</b>	NPV	4,110	3,955	4,053	4,138	
Option C & D – reduction in Overdale redevelopment receipts	NPV / weighted benefit point			1,467	1,096.56	Yes
<b>Sensitivity 4</b>	NPV	4,110	3,963	4,052	4,148	
Options – Reduction in Jersey General redevelopment receipts	NPV / weighted benefit point		1,724		1,099.00	Yes

Table 37: Sensitivity Analysis

11.31 It is clear from the above that in the worst case where all sensitivity elements occur then the preferred option would change to / remain as Option D being 100% New Build at the Waterfront.

## Conclusion and Recommendations

11.32 The above analysis indicates that the Preferred Option emerging from the benefits and risk analysis is Option D being the Waterfront and, whilst this Option does not offer the lowest NPV it does deliver significantly greater value in comparison to other options in cost benefit terms.

11.33 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.



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11.34 Finally the Option is considered to be robust in that it remains the preferred Option in all but the severest circumstances where all external sensitivities would have to apply for it to be replaced by another Option.

11.35 On this basis Option D being 100% new build at the Waterfront is considered to be the Preferred Option.

11.36 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.

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## **12 Part D – Rejected variant proposals**

- 12.1 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.
- 12.2 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.
- 12.3 A summary of the considered options is set out below with drawn details included in appendix 32

### **Option A**

- 12.4 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.
- 12.5 This option was reviewed and proved to be more complex and technically challenging than the initial Strategic Outline Case scheme involving difficult decanting requirements that could not be resolved.
- 12.6 As such this option was not progressed.

### **Option B**

- 12.7 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.
- 12.8 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

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### **Option C – extended site encompassing Lewis Street**

12.9 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

12.10 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.

12.11 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**

12.12 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.

12.13 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.

12.14 As a result neither option was developed any further.

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## 13 Appendices Schedule

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

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