



# Bermuda Hospitals Board

CARING FOR OUR COMMUNITY

## Estate Master Plan

### Volume Four Recommendations Report





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## 1. Introduction

The **Recommendations Report** (vol. IV) developed for the Bermuda Hospitals Board (BHB) Estate Master Plan summarizes the further development of the three Campuses of Care, Staff Housing, and the exploration of three site options for the Acute Care Hospital.

- Arboretum Site
- Botanical Gardens Site
- King Edward VII Memorial Hospital Site

### Acute Care Hospital

In June 2005, in conjunction with Government, the BHB requested that the Estate Master Plan Team gauge public opinion for the various Acute Care Hospital replacement options. Implementation schedules and cost estimates for each of the three options were also developed.

Public forums were conducted with BHB representatives and the general public in June and July (two BHB forums and six public forums). Surveys were conducted (via website, at the public forums and via telephone) to document opinions for each of the three sites. Public support was greatest for remaining at the King Edward VII Memorial Hospital site despite the many logistical and physical challenges and risks that would be associated with this option.

Upon review of all of the factors that affect the delivery of quality healthcare to Bermuda, the Project Steering Committee reinforced that the Arboretum Site would best serve the long-term needs of healthcare as originally selected. However, it was also recognized that time is of the essence, and due to considerable public opposition to using any parkland for a hospital site, the prudent decision would be to develop a Replacement Hospital on the existing King Edward VII Memorial Hospital Site. In July 2005, the Bermuda Hospitals Board endorsed this recommendation.

It is important to note, however, that there are considerable risks associated with constructing a new Replacement Hospital on the KEMH site, while keeping the existing facility in operation. In addition, a plan must be implemented as soon as possible to relocate the existing Continuing Care Facility and Nurses Residence in order to begin construction of the Replacement Hospital.



Arboretum Site



Botanical Gardens Site



King Edward VII Memorial Hospital Site



## 1. Introduction



Central Campus



West Campus



East Campus

### Campuses of Care

The development of "Campuses of Care" is a critical component to achieving a comprehensive Estate Master Plan that addresses the total continuum of care for the citizens of Bermuda. Significant benefits of this "satellite facilities" approach include:

- Healthcare delivery is expanded throughout the island
- Services are closer to the patients, family, and caregivers
- Dispersed facilities can better respond to potential natural disasters
- Routine medical care can be provided outside of an "Emergency" environment
- Continuing Care Facilities are better suited in a community setting
- Group Homes are better suited in a community setting

Three sites were identified for further development evaluation:

- Central Campus - Mid-Atlantic Wellness Institute Site
- West Campus - Port Royal Site
- East Campus - Southside St. David's Site

The East and West representative sites are owned by the Bermuda Land Development Corporation (BLDC). Further investigation will be required before a final site is chosen for development. The larger Central site is already owned by the BHB and could be developed quickly. Each of the campuses will accommodate a 10,000 SF Primary Care Centre, 60 - 72 bed Continuing Care Facility, and Mental Health Group Homes that will house 60 patients.

### Mid-Atlantic Wellness Institute

The Central Campus site is sufficient in size to accommodate the Replacement Hospital for the Mid-Atlantic Wellness Institute. Because the current Mental Health Hospital has excess space, a phasing plan can be implemented that would allow for the new Replacement Hospital to be constructed north of the main building complex.

### Continuing Care Facilities

The Continuing Care Facilities will be single-story, twelve-bedroom units with the amenities of home. The units will be organized around resident gardens.



## 1. Introduction

### Staff Housing

The Bermuda Hospitals Board (BHB) owns the site immediately north of Berry Hill Road to the north of the King Edward VII Memorial Hospital site. It is proposed that this site be used to develop Staff Housing. Its close proximity to the Hospital is a definite advantage, and its topography, while acceptable for housing, does not lend itself to be used for an Acute Care Hospital.

### Schedule

The Estate Master Plan implementation schedule will require at least 7 - 8 years to complete. Development of the new Acute Care Hospital on the King Edward VII Memorial Site will require that the Continuing Care Facility, and Nurses Residence be relocated and then demolished. As a result, construction will not be able to begin on the Acute Care Hospital until 2009, with an opening date scheduled for mid 2014.

The Planning and Design phases for the proposed scope of work are expected to continue to the end of 2007. Pre-Design Services are scheduled to begin no later than January, 2006. Facilities Design will occur during 2006 and 2007. There are a number of potential opportunities to streamline and shorten the implementation process. This will require a detailed examination of interim solutions for Continuing Care and Staff Housing.

### Cost

The current estimated Capital Cost (including equipment and duty but not including escalation and risk) in 2005 BMD dollars for implementing the entire Estate Master Plan is approximately \$721 million. The programme components include:

- |  |                  |
|--|------------------|
| • Acute Care Hospital                    | \$ 505.8 million |
| • Medical Office Building                | \$ 40.9 million  |
| • Mental Health Hospital and Group Homes | \$ 70.0 million  |
| • Continuing Care Facilities (3)         | \$ 75.5 million  |
| • Staff Housing                          | \$ 28.6 million  |

Reference should be made to PriceWaterhouseCoopers' [Bermuda Hospitals Board Estate Master Plan Business Case](#) which has been prepared independently from the Estate Master Plan. The [Business Case](#) includes cost figures that include escalation and risk.





## 1. Introduction

It should be noted that the construction cost estimates are based on a Pre-Schematic and Master Facilities programme documents and are not a completed set of working drawings that would be utilized by a contractor to bid the project. The estimates provide reasonable cost envelopes within which facility designs can be developed. Further cost estimates based on more detailed design and engineering information may vary from this baseline estimate.

### Next Steps

The Estate Master Plan as described in these documents does not represent a final detailed programme, organizational plan, or design concept. It outlines the new and exciting vision and direction that the BHB will use to guide the future development of a more integrated healthcare delivery model for the citizens of Bermuda. With Government approval of the plan, the following critical next steps must be undertaken before final design can commence:

- Determine sites for the relocation of the Continuing Care Facility and Nurses Residence
- Evaluate Alternative Operational Models within an integrated system
- Develop a detailed room-by-room Functional Programme
- Prepare a detailed Risk Assessment study
- Revise the Estate Master Plan concept designs based on the final programme
- Finalize the project scope and cost based on the final programme and design
- Determine the final funding and procurement process

The Estate Master Plan has been a diligent and very open and inclusive process. Multiple options were explored and reviewed with staff, physicians, agencies, and the general public on numerous occasions. It is the desire of the BHB to continue the momentum and move quickly into the next phase of planning and design.



## 2. Programme Summary

During September and October 2004, Cannon Design assisted BHB in developing the preliminary space planning programme for the Estate Master Plan for the Bermuda Hospitals Board (BHB). Medical Planners from Cannon Design met with senior BHB leadership and stakeholders to discuss understand and establish key strategic initiatives and operational goals of BHB services for the future. To ensure that the BHB space allocations meet future needs, the planning team reviewed historical workload volumes provided by BHB. A patient volume and bed demand capacity analysis and projections for FY 2020 were prepared based on the anticipated Bermuda population growth projection and to take into consideration the specific concerns and profile of Bermuda as well as address current trends anticipated in the delivery of healthcare in the future. Parameters for the programme requirements were benchmarked against other community hospitals in the United States, Canada and Great Britain.

In coordination with this task, Cannon Design also interviewed department staff representatives and toured all BHB facilities and service lines at King Edward VII Memorial Hospital and The Mid-Atlantic Wellness Institute in order to understand the BHB current care delivery system/models, anticipated changes for service delivery for the future, as well as information on daily operations and staffing.

Based upon BHB review and approval of the workload data and projections and the approved operational concepts, Cannon Design developed the preliminary space programme (by department and facility). Next steps include conducting planning sessions for identification and discussion of options based on the established philosophy and overall planning concepts with an emphasis on anticipated future methods of care delivery and flexibility for future growth and expansion.





## 2. Programme Summary

### a. Master Programme Summary

Programme/Service	Existing DGSF	Proposed DGSF	Proposed DGSM	Comments
<b>Acute Care Replacement Hospital</b>				
Diagnostic Services	60,395	89,435	8,309	Includes Radiation Oncology
Ambulatory Services	16,410	28,775	2,673	
Inpatient Services	67,665	107,210	9,960	ICU adjusted to 10 beds from 8 beds.
Support Services	21,245	30,200	2,806	Does not include FS, LAUN, MAT MGMT & STOR.(below)
<b>Total Department Gross Square Feet</b>	<b>165,715</b>	<b>255,620</b>	<b>23,747</b>	
35% Bldg Grossing Factor provided (average/best use)		1.35	1.35	
<b>Total Building Gross Square Feet</b>	<b>416,253</b>	<b>345,087</b>	<b>32,059</b>	
<b>BHB System Support Centre</b>				
Food Services - Food Preparation / Storage	9,930	8,000	743	
Laundry	7,105	7,160	665	
Materials Management	9,485	12,270	1,140	
Storage - Long Term	5,940	6,000	557	
<b>Total Department Gross Square Feet</b>	<b>32,460</b>	<b>33,430</b>	<b>3,106</b>	Existing Area incl. In Acute Care Hospital
20% Bldg Grossing Factor provided (average/best use)		1.20	1.20	
<b>Total Building Gross Square Feet</b>		<b>40,116</b>	<b>3,727</b>	
<b>Medical Office Building</b>				
Administrative Services	31,135	45,555	4,232	Existing Area incl. In Acute Care Hospital
Ministry of Health Administrative Services	20,000	20,000	1,858	Existing Area to be verified.
Physician Office Space	0	60,000	5,574	
<b>Total Department Gross Square Feet</b>	<b>116,055</b>	<b>125,555</b>	<b>11,664</b>	
25% Bldg Grossing Factor provided (average/best use)		1.25	1.25	
<b>Total Building Gross Square Feet</b>		<b>156,943</b>	<b>14,580</b>	



**2. Programme Summary**  
**a. Master Programme Summary**

<b>Programme/Service</b>	<b>Existing DGSF</b>	<b>Proposed DGSF</b>	<b>Proposed DGSM</b>	<b>Comments</b>
<b><u>Mental Health Campus</u></b>				
Acute Psychiatric Inpatient (19 + 6 Beds)	10,869	11,250	1,045	
Longterm Psychiatric Inpatient (18+24 Beds)	41,486	21,350	1,983	
Detox Inpatient Unit (10 Beds)	1,360	3,150	293	
Outpatient Services & Clinics	32,340	36,995	3,437	
Administrative Services	10,530	12,120	1,126	
Support Services	11,335	13,265	1,232	
<b>Total Department Gross Square Feet</b>	<b>107,920</b>	<b>98,130</b>	<b>9,116</b>	
35% Bldg Grossing Factor provided (average/best use)		1.35	1.35	
<b>Total Building Gross Square Feet</b>	<b>183,032</b>	<b>132,476</b>	<b>12,307</b>	
<b><u>Continuing Care Campus</u></b>				
<b><u>Existing</u></b>				
Continuing Care	33,785			Existing Area incl. In Acute Care Hospital
Dementia Care Beds	9,075			Existing Area incl. In Acute Care Hospital
<b><u>Proposed</u></b>				
<b>Continuing Care Campus West - 72 Beds</b>				
6 Houses - 12 Beds each		24,210	2,249	
Resident/Staff Services		5,210	484	
Administrative Services		2,580	240	
Support Spaces		3,960	368	
35% Bldg Grossing Factor provided (average/best use)		1.35	1.35	
<b>Total Building Gross Square Feet</b>		<b>48,546</b>	<b>4,510</b>	



## 2. Programme Summary

### a. Master Programme Summary

Programme/Service	Existing DGSF	Proposed DGSF	Proposed DGSM	Comments
<b>Continuing Care Campus Central - 60 Beds</b>				
5 Houses - 12 Beds each		20,175	1,874	
Resident/Staff Services		4,340	403	
Administrative Services		2,149	200	
Support Spaces		3,299	306	
35% Bldg Grossing Factor provided (average/best use)		1.35	1.35	
<b>Total Building Gross Square Feet</b>		<b>40,450</b>	<b>3,758</b>	
<b>Continuing Care Campus East - 60 Beds</b>				
5 Houses - 12 Beds each		20,175	1,874	
Resident/Staff Services		4,340	403	
Administrative Services		2,149	200	
Support Spaces		3,299	306	
35% Bldg Grossing Factor provided (average/best use)		1.35	1.35	
<b>Total Building Gross Square Feet</b>		<b>40,450</b>	<b>3,758</b>	
<b>Mental Health Group Homes (Learning Disability)</b>				
Group Homes (11 Units = 55 Beds)	15,830	24,750	2,299	Existing Area incl. In Mental Health Campus
25% Bldg Grossing Factor provided (average/best use)		1.25	1.25	
<b>Total Building Gross Square Feet</b>		<b>30,938</b>	<b>2,874</b>	



**2. Programme Summary**  
**a. Master Programme Summary**

<b>Programme/Service</b>	<b>Existing DGFSF</b>	<b>Proposed DGFSF</b>	<b>Proposed DGSM</b>	<b>Comments</b>
<b>Primary / Urgent Care Centre</b>				
West Location		10,000	929	
East Location		10,000	929	
15% Bldg Grossing Factor provided (average/best use)		1.15	1.15	
<b>Total Building Gross Square Feet</b>		<b>23,000</b>	<b>2,137</b>	
<b>Staff Housing</b>				
Studio Unit (36 Units)	24,231	18,000	1,672	
One Bedroom (25 Units)		16,250	1,510	
Two Bedroom (6 Units)		6,000	557	
Three Bedroom (6 Units)		7,200	669	
Twelve Unit Guest House		3,825	355	
15% Bldg Grossing Factor provided (average/best use)		1.15	1.15	
<b>Total Building Gross Square Feet</b>	<b>24,231</b>	<b>58,966</b>	<b>5,478</b>	
<b>Total Gross SF / SM</b>	<b>623,516</b>	<b>916,971</b>	<b>85,187</b>	





### 3. Acute Care Hospital

#### a. Options

In June, 2005, the BHB, in conjunction with Government, requested that the Estate Master Plan Team develop Acute Care Hospital options in further detail at the following sites:

- Arboretum Site
- Botanical Gardens Site
- King Edward VII Memorial Hospital Site

The Team facilitated six public forums and two BHB forums during June and July to explain the various options and to then gauge public opinion for the options. Surveys were conducted via website, at the public forums, and via telephone sampling.

The evaluation of the three sites included a review of the following material:

- Site Plan(s)
- Floor Plans
- Site / Building Section
- Implementation Schedule
- Cost Estimate
- Strengths and Weaknesses Summary
- Qualitative Risk
- Objective / Benefit Matrix

Each site option is documented on the following pages.



Arboretum Site



Botanical Gardens Site



King Edward VII Memorial Hospital Site



## 3. Acute Care Hospital

### a. Options

Through the interview and facility tour process, BHB stakeholders and department representatives identified program and service planning initiatives to be considered to be incorporated into the options for the Estate Master Plan. Listed below are the planning concepts that are common to each option developed to date.

#### Administration / Public

- Consolidate Intake Services including Registration/Admitting, Pre-Admission Testing (PAT) and Blood Draw in one location to provide one-stop service, reducing multiple service locations that exist; and excessive patient travel routes.
- Locate Public Services along the public concourse to include a Retail Pharmacy, Coffee Shop, Gift Shop and Credit Office.
- Locate and expand Health Education Services including classrooms and the Medical Library are convenient to the front door to emphasize commitment to community education.

#### Diagnostic Services

- Configure high volume Outpatient Services such as Medical Outpatient Clinic, Wound Care / HBO, Dialysis and Infusion Therapy with convenient outpatient access.
- Develop Infusion Therapy and Oncology Services in a consolidated Oncology/Infusion Therapy Centre and efficiently utilize/share support space
- Locate and configure Dialysis and Infusion Therapy areas serving longer length of visit patients with maximized exterior views.
- Conveniently locate Rehab/Physiotherapy to the central lobby or designated entrance with direct patient drop-off / pick-up; this area is also directly linked to the Rehab inpatient unit. Functionally group the Orthopedic Clinic adjacent to Physiotherapy/Rehab to minimize patient travel distances and support Limb and Brace Clinic concept.
- Emergency walk-in patients and ambulance access will be separated from general traffic upon arriving on the site and have separate entrance to the Emergency Department.
- Develop a Diagnostic Hub that accommodates Imaging/Radiology, Surgery/Endoscopy and Cardiology immediately adjacent to Emergency Department in a consolidated layout. Develop procedure areas and the main Surgery Suite based on the concept of a flexible diagnostic zone where various Diagnostic Services may be developed to cross-utilize procedure space as patient acuity and technology enable this concept. (i.e. future Invasive Cardiology). Organizationally, Sterile Processing is located immediately adjacent to the Surgery Suite.
- Develop an Asthma/Diabetes/Respiratory Centre functionally located adjacent with Cardiology and CHF.



### 3. Acute Care Hospital

#### a. Options

##### Inpatient

- Typical Medical/Surgical Unit provides 32 beds.
- Each private or semi-private patient room will have an attached private patient toilet room with a shower, (Proposed: 100% ADA accessible.) and be sized for family member sleeping-in, medical equipment, and TV/armoire.
- The Surgical Unit (36 beds required on a 32 bed unit) is located adjacent to the Rehab Unit (24 beds required on a 32 bed unit) in order to enable swing capacity to accommodate Surgical unit overflow as needed.
- The Surgical Unit is located with direct access to the Surgery Suite; the Rehab Unit is vertically linked to the Rehab/Physiotherapy Department.
- Patient rooms have been sized and configured for patient, staff and family areas accommodating sleeping-in. The patient will be able to control window shading, interior lighting, and room temperature.
- Room finishes will be residential in character. Built-in cabinetry, concealed lighting, furniture, and artwork will be chosen to create a warm, comfortable, "hotel-like" feeling.
- The nursing units will all be oriented towards the Arboretum. Large expanses of glass offer panoramic views of the park and provide natural light to each patient room.
- Internally, circulation for services that may accommodate limited inpatients or support services will utilize designated elevators provide discreet access to/from upper floors.

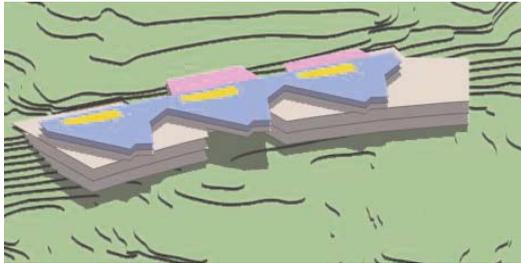
##### Support

- Support Services located towards the "back of facility" will utilize a designated service entrance include: Material Management, Laundry, Environmental Services, Food Services, Pharmacy and Bio-Med are located on a service corridor. Staff dining is accessed off the public/general use corridor.
- The Support Service zone is configured for direct access for delivery vehicles as well as direct distribution of supplies to the facility without mixing traffic with patients and public users.



## 3. Acute Care Hospital

### a. Options - Arboretum Site



**The Arboretum** open space will form an identifiable entrance zone from both the west and south boundaries. When viewing the new hospital, one's eyes will be instantly drawn to the arboretum in front of it. Built into the steep slope of the north edge, the building becomes an extension of the natural topography, not an object on it. All of the nursing units will be oriented to the central green space.

A stone-lined access road from both Montpelier Road and Middle Road will gently lead to a drop-off area at the centre of the site, providing a serene arrival point for all patients and visitors. All vehicle parking will be accommodated within a parking deck that is also built into the existing slope. Emergency access and parking will be separated upon arrival to the site. Service vehicles would access the facility from the back of the proposed building, along Fort Hill Road.

The public will still be able to access the majority of the front grounds that will be further enhanced with paved walking paths and additional planting. The serene inland setting of open space, conifers, palms, meadows, and interesting plants and shrubs will be maintained. The Deputy Governor's Residence at the corner will also not be disturbed.

Spiritually, the green park will remain the very heart of the campus and signal the commitment of the Bermuda Hospitals Board to the creation of a total healing environment. Within the wider context of the site, the Arboretum will continue to be part of the network of green spaces that are vital recreation and leisure resources to the citizens of Bermuda.

**The New Acute Care Hospital**, a natural extension of the existing topography and sedimentary rock formation, will be perceived as a series of horizontal, landscaped terraces. The ridge that runs along the north side of the site has a 20-meter drop that will allow for the fluid integration of four programme levels.

Natural light will be brought into the interior of the support levels through skylights that are located on each of the terraces. Each nursing station, located at the corner of the triangular patient unit, is expressed on the exterior of the building as a glass corner, offering fabulous views of the park to the staff as well as patients and family members.

The base of the facility will utilize natural Bermuda stone. Large expanses of glass, used to integrate the interior spaces via views to the Arboretum, will be "reflective" in order to further diminish the impact of this building on the site.



**3. Acute Care Hospital**  
**a. Options - Arboretum Site**



**Site Plan**



### 3. Acute Care Hospital

#### a. Options - Arboretum Site

##### Ground Level

The Ground Level serves the main arrival entrance to the facility, providing high volume outpatient services, intake services and public/education services convenient to the main entrance.

- Patients can access this level and services if dropped off by car, or from designated parking deck located directly adjacent to these services areas.
- Outpatient services such as Medical Outpatient Clinic, Wound Care / HBO, Dialysis and Infusion Therapy are configured for convenient outpatient access.
- Rehab/Physiotherapy are located with direct patient drop-off / pick-up and parking access for disabled Rehab patients; this area is also linked to the Rehab inpatient unit above. The Orthopedic Clinic is also located adjacent to Rehab to minimize patient travel distances.
- Intake services including Registration/Admitting, Pre-Admission Testing and Blood Draw are consolidated in one location to provide one-stop service.
- Public services clustered along the public concourse include a Retail Pharmacy, Coffee Shop, Gift Shop and Credit Office and Education.

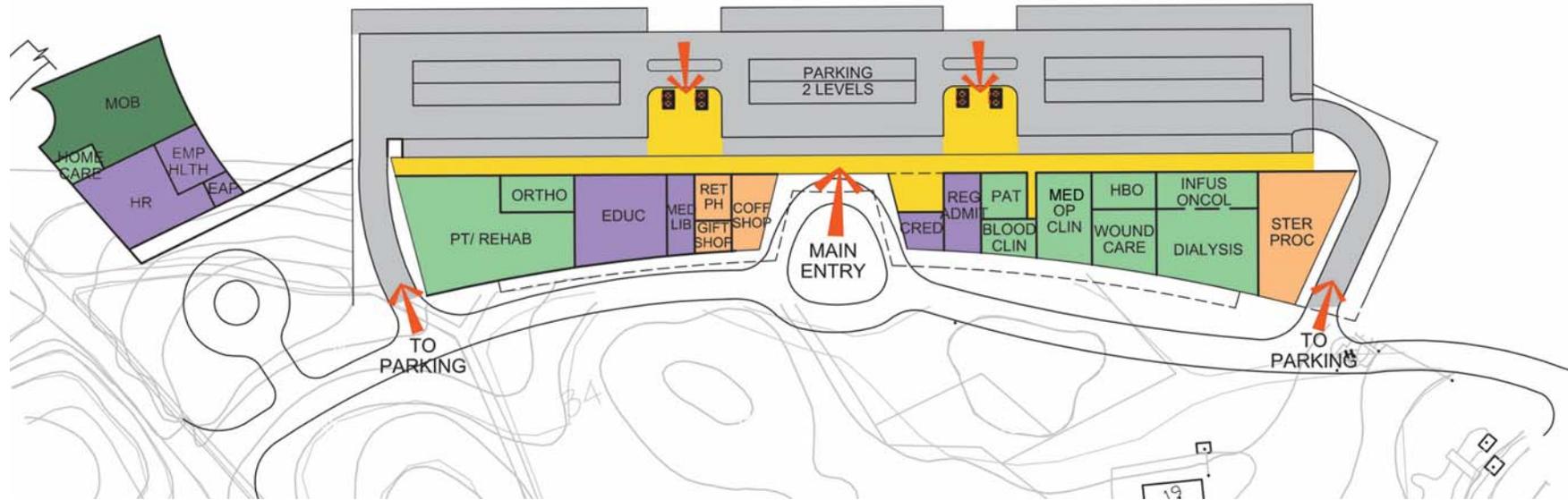
##### Level 1

Level 1 serves as the main diagnostic hub as well as the support chassis for the new facility. The plan is developed in two distinct zones that clearly separates patient diagnostic areas from support areas with defined circulation system; while also providing direct access from support zones to directly supply diagnostics as needed.

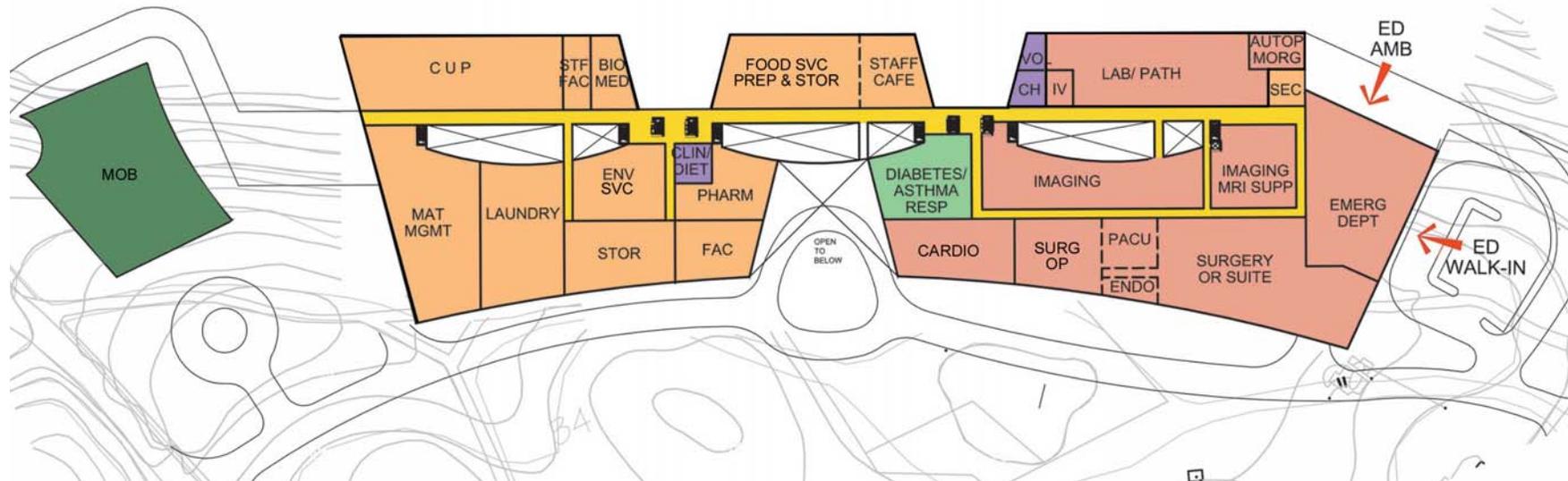
- General patient access is accommodated via the main entrance below or via parking deck interstitial level with elevators that directly transport patients to points of care.
- The Diagnostic Hub accommodates: Imaging/Radiology, Surgery and Cardiology are located immediately adjacent to Emergency Services in a consolidated layout.
- Sterile Processing is located directly below the Surgery Suite and is connected by designated vertical circulation.
- Cardiology is also developed in coordination with a designated Asthma/Diabetes/Respiratory Centre located immediately adjacent.
- Laboratory and Pathology is centrally located in the facility to support all intake and diagnostic services and inpatient units as well as convenient to the exterior for courier access.
- The Support Service zone is configured for direct access for delivery vehicles as well as direct distribution of supplies to the facility without mixing traffic with patients and public users.



**3. Acute Care Hospital**  
**a. Options - Arboretum Site**



**Ground Level**



**Level 1**



## 3. Acute Care Hospital

### a. Options - Arboretum Site

#### Level 2

- Intensive Care Unit is located directly above the Emergency Department, the Surgery Suite and Diagnostics for direct transport of the high acuity patients.
- Two Medical Hub Units are provided; they are located adjacent to the ICU in order to serve as a step-down unit for appropriate medical patients when required.
- Maternity and Paediatrics are located in a designated inpatient pod with distinct separation from the general Medical/Surgical units.
- Agape Beds are located in a freestanding home-like setting but are physically attached to the main Hospital via patient corridor.
- Medical Management programmes Health Records and Medical Staff Services for physicians are located on the main circulation spine connecting all services.

#### Level 3

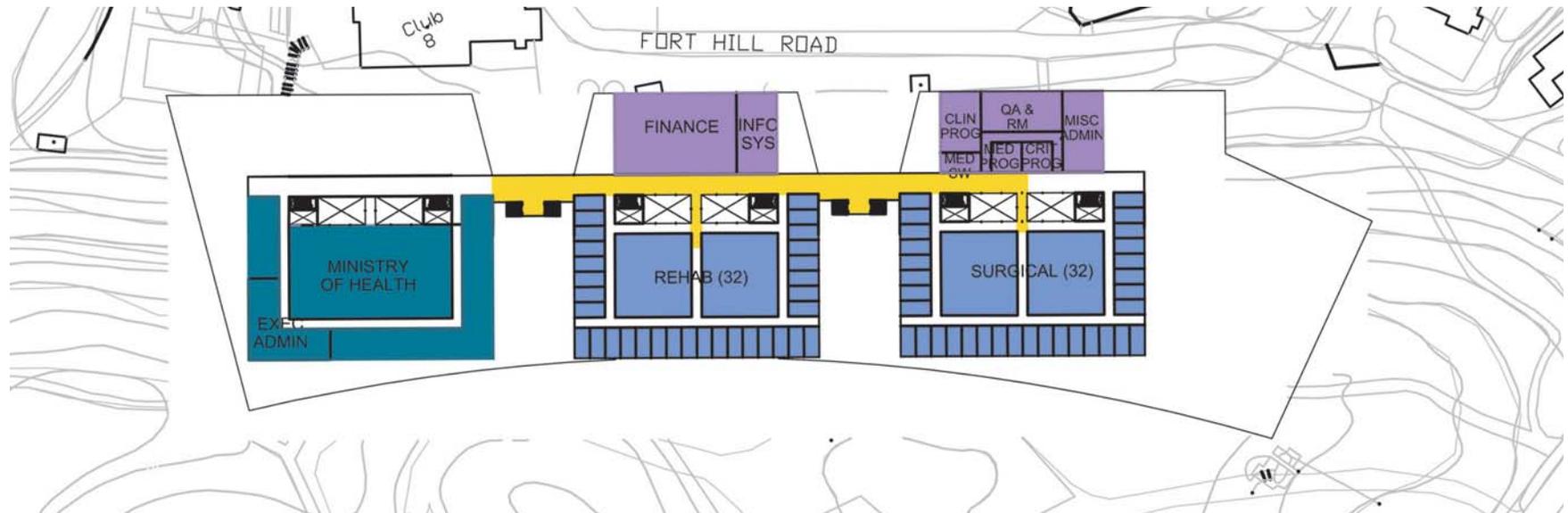
- Surgical Unit is located directly above the Surgery Suite.
- The Rehab Unit (24 beds) is located adjacent to the Surgical Unit (36 beds required) in order to flex to accommodate Surgical unit overflow as needed; the Rehab is also vertically connected to the Rehab/Physiotherapy Department.
- Inpatient elevators provide discreet access from upper floors and connect to these service areas.
- Ministry of Health administrative space is configured as an inpatient care pod, to accommodate future growth of inpatient beds if required.
- The Support Service zone is configured for direct access for delivery vehicles as well as direct distribution of supplies to the facility without mixing traffic with patients and public users.



**3. Acute Care Hospital**  
**a. Options - Arboretum Site**



**Level 2**



**Level 3**



### **3. Acute Care Hospital** **a. Options - Arboretum Site**

#### **Implementation Schedule**

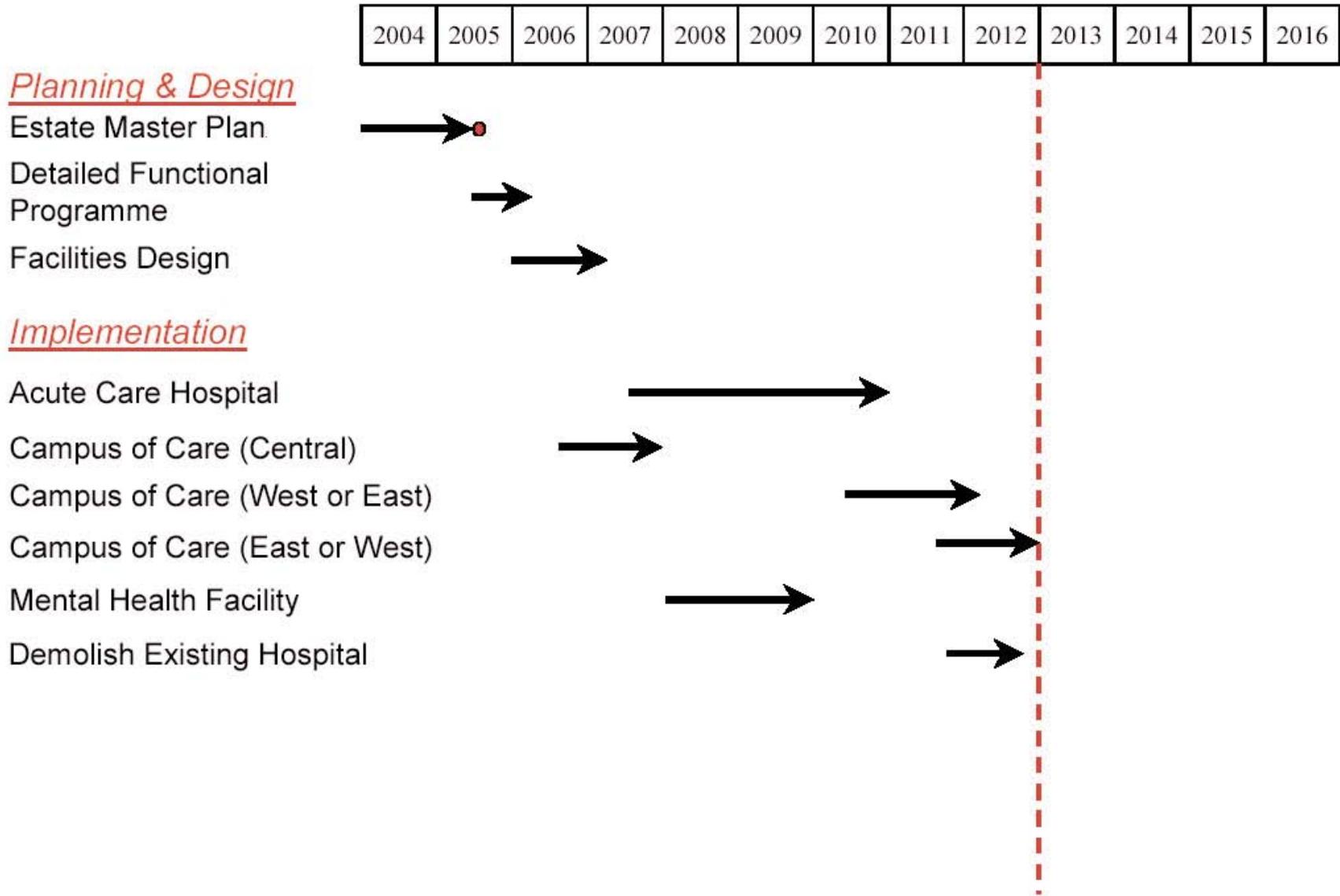
The Planning and Design phases for the proposed scope of work will continue into the beginning of 2007. The final Estate Master Plan documents will be completed in September, 2005. The preparation of a detailed Functional Programme will require approximately 6 months. It is expected that Facilities Design will occur during 2006 and the first quarter of 2007.

Construction of the Replacement Hospital at the Arboretum site could begin as early as the second quarter of 2007 and be completed by the end of 2010. The construction of the Continuing Care Facilities, Group Homes, Primary Care Centres, and new Mental Health Hospital could occur at any time during the same period if funding were in place and cash flow was adequate. Demolition of the existing King Edward VII Memorial Hospital would be scheduled during 2012.

All components of the Estate Master Plan would be implemented by the end of 2012, which is within the critical period identified during the Comprehensive Strategic Review.



**3. Acute Care Hospital**  
**a. Options - Arboretum Site**





### 3. Acute Care Hospital a. Options - Arboretum Site

#### Strengths:

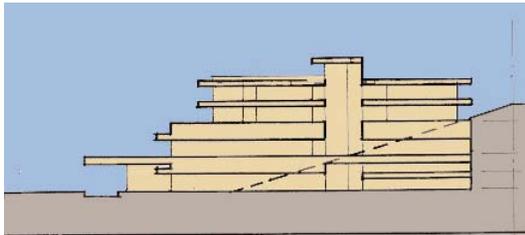
- No disruption or negative impact on the existing operations or patients
- Equivalent area of KEMH site returned to Government as Open Space (no net loss of park space)
- (70%) Majority of the Arboretum will remain
- Distinct separation of service access from public and patient access
- Potential to incorporate Qualities of Healing Environment into a Garden Setting
- Building perceived as two levels from north and east
- Completed 2010 (within critical stage identified and with a two year contingency)

#### Weaknesses:

- Requires long-term use of part of Arboretum Site
- Increases traffic on Middle Road and Montpelier Road
- Partial disruption of Arboretum Site during construction (4 years)
- Additional institutional development in the area

#### Qualitative Risk:

One significant strength of the AR.A - "Garden Terrace" Option is that it presents few (if any) Qualitative Risks or disruption to the ongoing operation of the existing hospital. Given that construction would be occurring on a greenfield site that is not adjacent or in close proximity to the existing hospital.





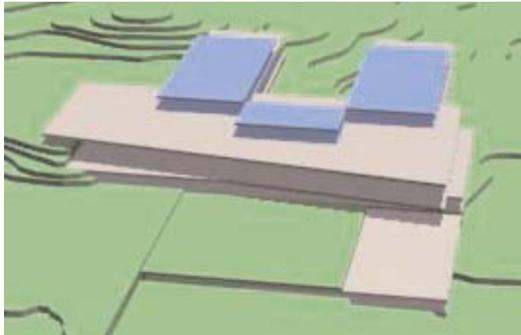
**3. Acute Care Hospital**  
**a. Options - Arboretum Site**

OBJECTIVE	BENEFIT		SCORE							#	HIGH SCORE CRITERIA	
			LOW SCORE CRITERIA	0	1	2	3	4	5			10
<b>AFFORDABILITY</b>												
	Site Availability	High \$ Cost			2						4.50	No Cost \$ to BHB
	Total Project Cost	High Project \$ Cost						7				Low project \$ Cost
<b>TIMELINESS</b>												
	Schedule to Completion	15 years							8		5.50	5 years
	Project Implementation Risk	Delays			3							No Delays
<b>QUALITY OF CARE</b>												
	Impact on Current operations	Disruptions								10		No Disruption
	Impact on Patients	Decreased Confidence/Use								9	9.67	Increased Confidence/Use
	Programme Requirements	Compromised								10		Meets Needs
<b>EFFICIENCY</b>												
	Functional Layout	Compromised								9		Preferred
	Future Flexibility	No Flexibility								9	8.67	Easily Expanded/Renovated
	Movement	Long Travel Distances							8			Short Travel Distances
<b>DESIGN IMAGE</b>												
	Site Image	Negative Impact								10	10.0	Positive impact
	Building Image	Institutional								10		Healing Environment
<b>FINANCE</b>												
	Revenue Potential	Lost Revenue								9		Increased Revenue
	Operational Costs	Increased Costs						7			8.33	Decreased Costs
	Ability to Fundraise	Status Quo/Long Delivery								9		New Image/Timely Delivery
<b>PUBLIC ACCEPTANCE</b>												
	BHB Staff	Low Acceptance					5					High Acceptance
	General Public	Low Acceptance			2						2.75	High Acceptance
	External Agencies/Gov't	Low Acceptance	0									High Acceptance
	Physician Community	Low Acceptance				4						High Acceptance
<b>TOTAL</b>										<b>49</b>	<b>MAXIMUM SCORE (70)</b>	



## 3. Acute Care Hospital

### a. Options - Botanical Gardens Site



The Botanical Gardens' existing landform and landscape influences every aspect of the proposed site organization for the new hospital. The formal garden and specimen trees along the western boundary of the site are the inspiration for the new and enriched formal landscape that will extend along the western side of a new central courtyard. The formal lawn will celebrate one's arrival and departure, and also provide a new open space within the Botanical Gardens for contemplation and reflection.

The main entrance and public spaces begin opposite a reflecting pond and then extend through the building to a multi-story "conservatory" that separates two terraced nursing units. A two-story advanced technology diagnostic centre links the two patient wings. The roof becomes an expansive garden used for contemplation, therapy and recreation. Patients, visitors, and staff will be able to overlook the formal courtyard to the west and the Botanical Gardens to the east. Strategically located skylights will also allow natural light to penetrate the interior spaces of the floors below.

A heavily planted landscape buffer, adjacent to the southern terraced roof garden, will provide a very compatible transition from the existing single-family homes to the new patient residences. Underground parking is provided at the southern end of the courtyard adjacent to the main entrance. The terraced structure will be sculpted to integrate with the falling landform and located to protect some of the Botanical Gardens' most treasured trees to the southwest.

Within the wider context of the entire Botanical Gardens site, the proposed land use will continue to provide a network of green spaces that are vital resources to the Bermuda citizens.

The New Acute Care Hospital is organized along the formal entrance lawn by a linear, slotted stone wall that defines the edge of the multi-story diagnostic centre. A continuous glass wall at grade strengthens the visual connection between the inside spaces and the outdoor landscaping. The bold cantilevered roof structure is an expression of the main entrance and its linkage to the Conservatory beyond.

The Conservatory will become the "heart" of the facility's public spaces. It is enriched with native landscaping and floral gardens familiar to all Bermudians, and will provide spectacular views into the gardens and beyond. The Conservatory encloses a circulation hub that will provide dedicated vertical and horizontal circulation within the new facility for patients, public, and service movement. The upper levels of the Conservatory will house family and educational support spaces that are shared between both nursing wings. Access to the public rooftop garden will provide a direct connection to experience Bermuda's unique climate and landscape.



**3. Acute Care Hospital**  
**a. Options - Botanical Gardens Site**





### 3. Acute Care Hospital

#### a. Options - Botanical Gardens Site

##### Ground Level

Ground Level serves as the support chassis for the new facility which includes Support Services and the Central Utility Plant.

- Administrative support services include Health Records, Information Services Human Resources and Employee Health, EAP, and QA/IC near public elevators.
- Material Management, Laundry, Environmental Services, Food Services and Pharmacy are located on a service corridor. Staff dining is accessed off the public/general use corridor.
- Laboratory/Pathology is located on this level with the Morgue function attached to the main Laboratory with convenient access to the exterior for courier access. Elevators and pneumatic tube will connect the Laboratory and Pathology to all intake and diagnostic services, and inpatient units.
- The Support Service zone is configured for direct access for delivery vehicles as well as direct distribution of supplies to the facility.
- Staff access is also provided to this level via connected parking deck.
- Shell space is also provided for future growth.

##### Level 1

Level 1 serves the main arrival entrance to the facility, providing high volume outpatient services, intake services and public/education services convenient to the main entrance, while providing clear and direct access to other patient service areas.

- Upon arrival, patients enter the main lobby central to outpatient services and public/education services. A public elevator hub is provided in the Lobby separate from the designated patient and support elevators.
- Administrative Space accommodates Finance and the Ministry of Health.
- Maternity and Pediatrics are located on a secured patient corridor linked to Diagnostics Centre one floor above.



**3. Acute Care Hospital**  
**a. Options - Botanical Gardens Site**



**Ground Level**



**Level 1**



## 3. Acute Care Hospital

### a. Options - Botanical Gardens Site

#### Level 2

Level 2 serves as the main diagnostic and surgical centre of the new facility.

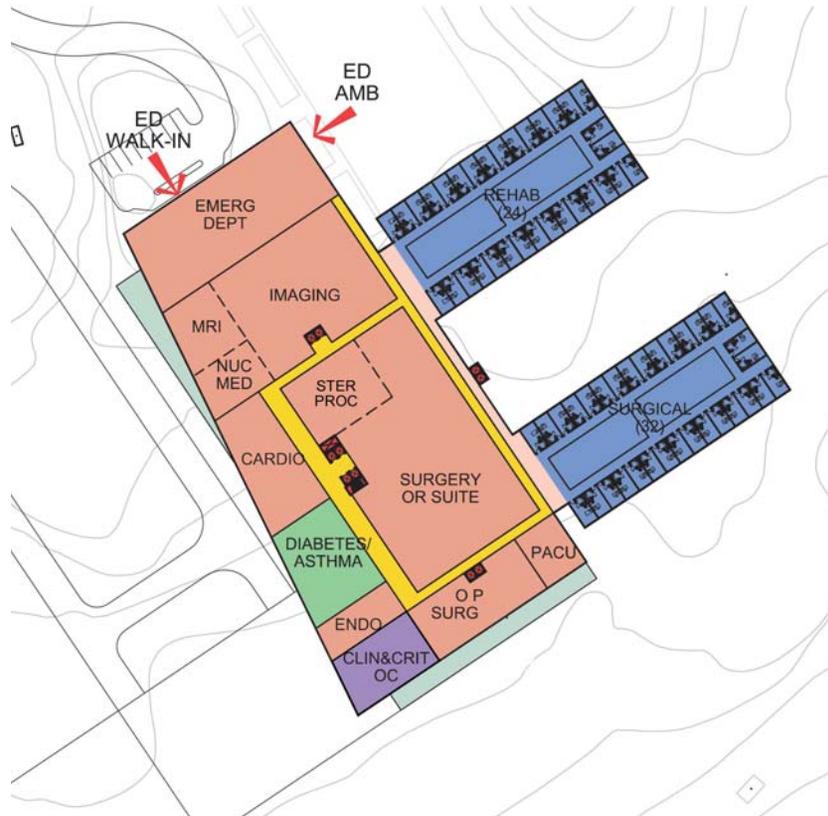
- The plan locates separate public elevators and outpatient circulation in the main diagnostic zone while a designated patient/support corridor links the Diagnostic/Surgical zone to the Surgical and Rehab inpatient zone. Designated inpatient elevators on this corridor located on this corridor connect to the upper floors.
- Emergency walk-in patients and ambulance access will be separated from general traffic upon arriving on the site and have separate entrances to the Emergency Department.
- The Diagnostic Hub accommodates: Imaging/Radiology, Surgery/Endoscopy and Cardiology are located immediately adjacent to Emergency Services in a consolidated layout. Sterile Processing is located immediately adjacent to the Surgery Suite.
- Cardiology is also developed in coordination with a designated Asthma/Diabetes/Respiratory Centre located immediately adjacent.
- Surgical Unit is located directly adjacent to the Surgery Suite.
- The Rehab Unit (24 beds) is located adjacent to the Surgical Unit (36 beds required) in order to flex to accommodate Surgical unit overflow as needed; the Rehab is also vertically connected to the Rehab/Physiotherapy Department.

#### Level 3

- Intensive Care Unit (ICU) is centrally located directly above the Diagnostic/Surgical Centre and Emergency Department for direct transport of the most critical patients.
- Two Medical Units are provided; they are located adjacent to the ICU in order to serve as a step-down area for appropriate medical patients.
- Note: Agape Beds are located in a freestanding facility in a home-like setting and is not attached to the main Hospital.



**3. Acute Care Hospital**  
**a. Options - Botanical Gardens Site**



**Level 2**



**Level 3**



### **3. Acute Care Hospital** **a. Options - Botanical Gardens Site**

#### **Implementation Schedule**

The Planning and Design phases for the proposed scope of work will continue into the beginning of 2007. The final Estate Master Plan documents will be completed in September, 2005. The preparation of a detailed Functional Programme will require approximately 6 months. It is expected that Facilities Design will occur during 2006 and the first quarter of 2007.

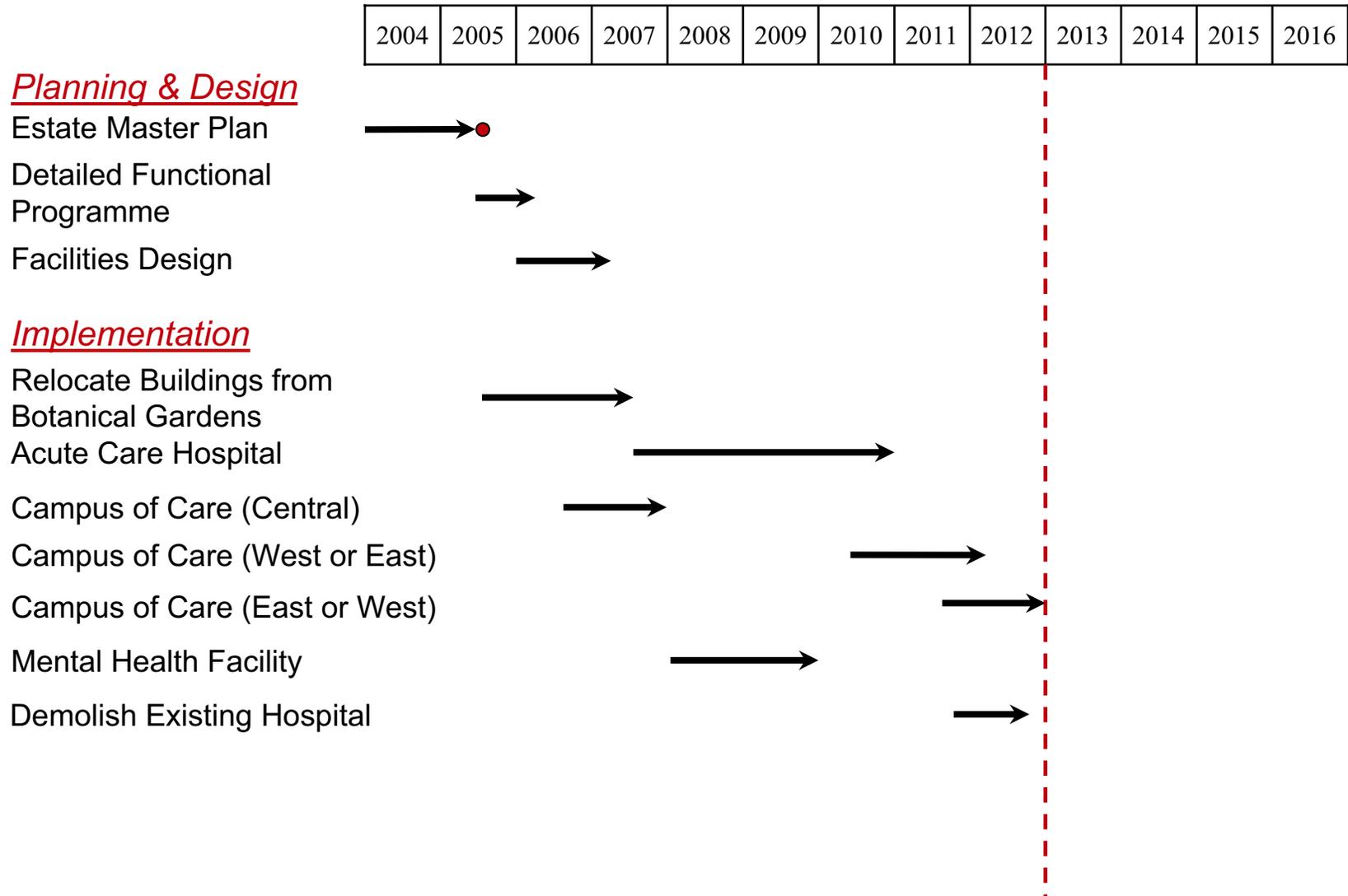
Construction of the Replacement Hospital at the Botanical Gardens site could begin as early as the second quarter of 2007 and be completed by the end of 2010 as long as the existing Botanical Gardens' buildings are relocated and demolished within the next 18 months. The construction of the Continuing Care Facilities, Group Homes, Primary Care Centres, and new Mental Health Hospital could occur at any time during the same period if funding were in place and cash flow was adequate. Demolition of the existing King Edward VII Memorial Hospital would be scheduled during 2012.

All components of the Estate Master Plan would be implemented by the end of 2012, which is within the critical period identified during the Comprehensive Strategic Review.



### 3. Acute Care Hospital

#### a. Options - Botanical Gardens Site





### 3. Acute Care Hospital

#### a. Options - Botanical Gardens Site

##### Strengths

- Minimal disruptions or negative impact on the existing operations or patients
- Allows timely delivery of Hospital (not impacted by Continuing Care)
- Potential to incorporate Qualities of Healing Environment into a Garden Setting
- Front Garden area (existing KEMH site) becomes public park setting
- Completed 2011 (within critical stage identified)

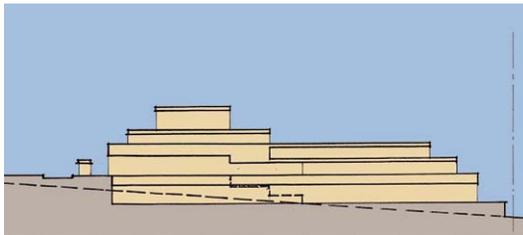
##### Weaknesses

- Environmental Sensitivity to taking over part of Botanical Gardens site (approx. 35%)
- Requires relocation of Botanical Gardens, existing Ministry of Environment and Parks Department Buildings, Exhibition Halls and Riding/Show Arena
- Premium cost (approx. 5%) due to relocation of buildings

##### Qualitative Risk:

While the qualitative risks associated with the BGA "Quadrangle" Replacement Hospital on the Botanical Garden Site are much less than on the KEMH site, there are however risks that should be considered. These include:

- Significant Noise Control Disruption
- Airborne Particles / Infection Control Concerns
- Vibration and its Effect on Hospital Services





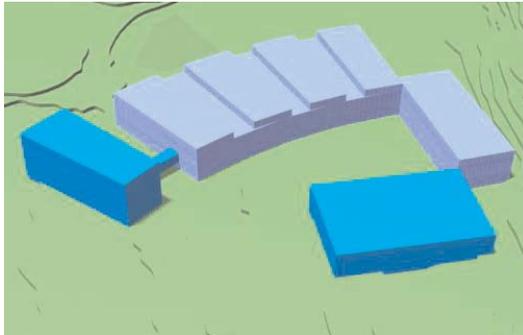
**3. Acute Care Hospital**  
**a. Options - Botanical Gardens Site**

OBJECTIVE	BENEFIT	SCORE										#	HIGH SCORE CRITERIA	
		LOW SCORE CRITERIA 0 ← → 10												
AFFORDABILITY														
	Site Availability	High \$ Cost	2										4.50	No Cost \$ to BHB
	Total Project Cost	High Project \$ Cost					7							Low project \$ Cost
TIMELINESS														
	Schedule to Completion	15 years					7						5.50	5 years
	Project Implementation Risk	Delays			4									No Delays
QUALITY OF CARE														
	Impact on Current operations	Disruptions						8						No Disruption
	Impact on Patients	Decreased Confidence/Use						8					8.33	Increased Confidence/Use
	Programme Requirements	Compromised						9						Meets Needs
EFFICIENCY														
	Functional Layout	Compromised						9						Preferred
	Future Flexibility	No Flexibility				6							7.33	Easily Expanded/Renovated
	Movement	Long Travel Distances					7							Short Travel Distances
DESIGN IMAGE														
	Site Image	Negative Impact						9						Positive impact
	Building Image	Institutional						9					9.00	Healing Environment
FINANCE														
	Revenue Potential	Lost Revenue						8						Increased Revenue
	Operational Costs	Increased Costs					7						7.67	Decreased Costs
	Ability to Fundraise	Status Quo/Long Delivery						8						New Image/Timely Delivery
PUBLIC ACCEPTANCE														
	BHB Internal User Group	Low Acceptance		3										High Acceptance
	General Public	Low Acceptance	2										5.00	High Acceptance
	External Agencies/Gov't	Low Acceptance						8						High Acceptance
	Physician Community	Low Acceptance					7							High Acceptance
<b>TOTAL</b>												<b>47</b>	<b>MAXIMUM SCORE (70)</b>	



### 3. Acute Care Hospital

#### a. Options - King Edward VII Memorial Hospital Site



The placement of the new Acute Care Hospital on the existing King Edward VII Memorial Hospital Site establishes a western and northern edge to a new central open space that will become the focal point for arrival. Structured parking occupies the east side of the central courtyard, leaving the south side open for visual and physical connection to the Botanical Gardens. The central courtyard will gently slope upward towards the building to provide main entrances for the Hospital as well as Women's Center off of the large round-about. The central courtyard is intended to become an extension of the Botanical Gardens, creating a natural environment on all levels of the new hospital.

Access to the site will occur from the southwest corner off of Point Finger Road and the northeast corner off of Berry Hill Road. This arrangement will allow the existing facility to remain in place and operational until the new facility can be brought on line. The crescent shape of the west wing of the new hospital follows the profile of Point Finger Road. The simple crescent form is benched into the steep existing slope, providing access from the south at the ground level and from the north at the upper level. All back-of-house support services are organized along the north side of the facility with direct access from the service entry of Berry Hill Road.

The Emergency Department is located on the upper level with a dedicated entry and parking from Berry Hill Road. A separate Medical Office Building is planned for the southwest corner of the site adjacent to the other physician offices along Point Finger Road.

The three-storey massing of the facility allows all programme elements to have direct and meaningful contact with the natural landscape. All of the inpatient units are organized on a single level along the crescent and linked together with a public colonnade that overlooks the central courtyard. Lower scale pavilions along the colonnade provide a comfortable human scale that helps to disguise its institutional function.

The nursing units will all be oriented towards the Hamilton Harbour. Large expanses of glass will offer panoramic views and provide natural light to each patient room. The rooftop terraces will provide pleasant settings for patients and visitors to interact. Skylights in the terraced roof allow natural light to penetrate the interior spaces of the floor below. Vertical circulation at the apex of the patient units provides easy and uniform access to all program spaces and captured open space within the facility.



**3. Acute Care Hospital**  
**a. Options - King Edward VII Memorial Hospital Site**



Berry Hill Road

Point Finger Road

Existing Hospital

Botanical Gardens



### 3. Acute Care Hospital

#### a. Options - King Edward VII Memorial Hospital Site

##### Ground Level

The Ground Level provides consolidated outpatient services along the public building face and also houses the components that make up the support chassis of the Hospital to the rear of the facility.

- A central main entrance serves the entire facility. Surface parking is immediately adjacent. Upon entry, high volume Outpatient Services and Public/Education service visitors are peeled off from the main lobby and other patients and visitors are directed to designated elevators providing direct access to the diagnostic hub and the inpatient units.
- Internally, inpatient and support is clearly separated from public with designated elevators.
- Laboratory/Pathology is located on this level with convenient access to the exterior for courier access. The morgue function is located convenient to the Lab, but located closer to the dock area. Elevators and pneumatic tube will connect the Laboratory and Pathology to all intake and diagnostic services, and inpatient units.

##### Level 1

Level 1 centralizes the diagnostic hub in the juncture of the "L" shaped plan of the new facility. The plan also accommodates administrative services on the perimeter of each leg of the "L" shaped plan.

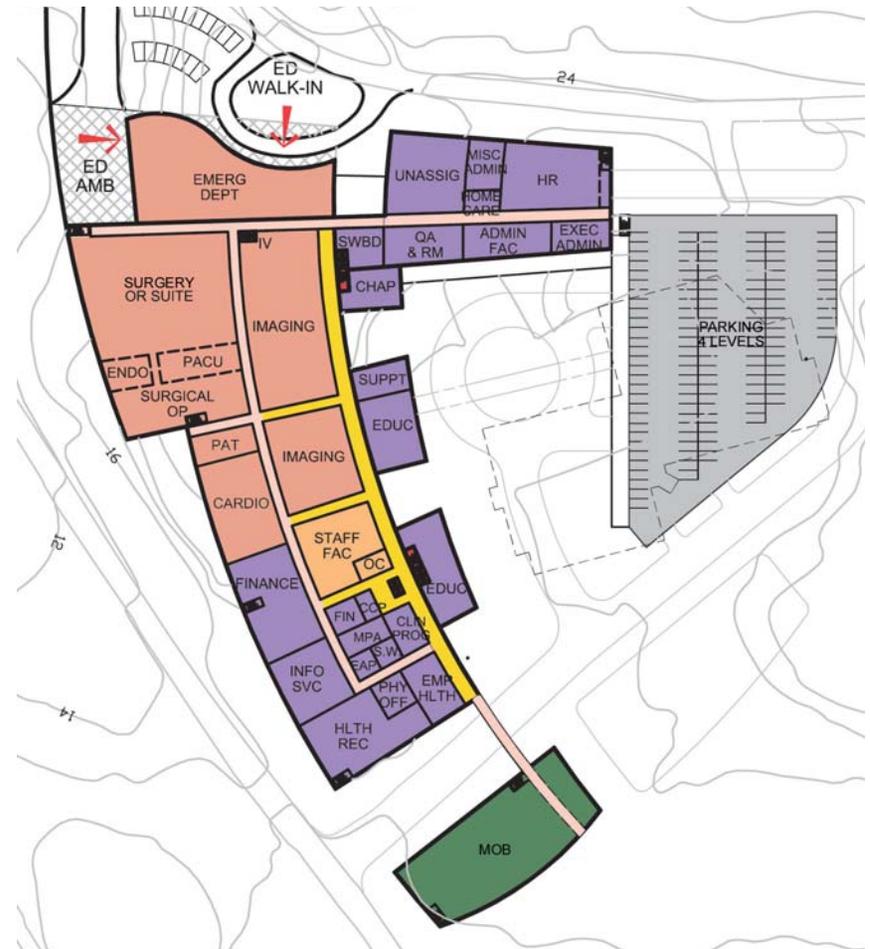
- On this level Emergency Department access for walk-in patients and ambulance access will be separated from general traffic upon arriving on the site.
- Interior circulation is managed by two distinct parallel corridors separating high volume outpatients and public from acute patient and clinical support circulation areas. As well as zone the diagnostic areas from the administrative areas.
- The Diagnostic Hub consolidates Imaging/Radiology, Surgery and Cardiology in one location is located immediately adjacent to Emergency Services.
- Administrative support services include Health Records, Information Services, Finance, Human Resources and Employee Health, Executive Administration and multiple medical management services.
- The Chapel is located with convenient access to the Emergency Department and Surgery as well as vertically convenient to the ICU.
- The main public concourse also connects to the future Medical Office Building.



**3. Acute Care Hospital**  
**a. Options - King Edward VII Memorial Hospital Site**



**Ground Level**



**Level 1**



### **3. Acute Care Hospital**

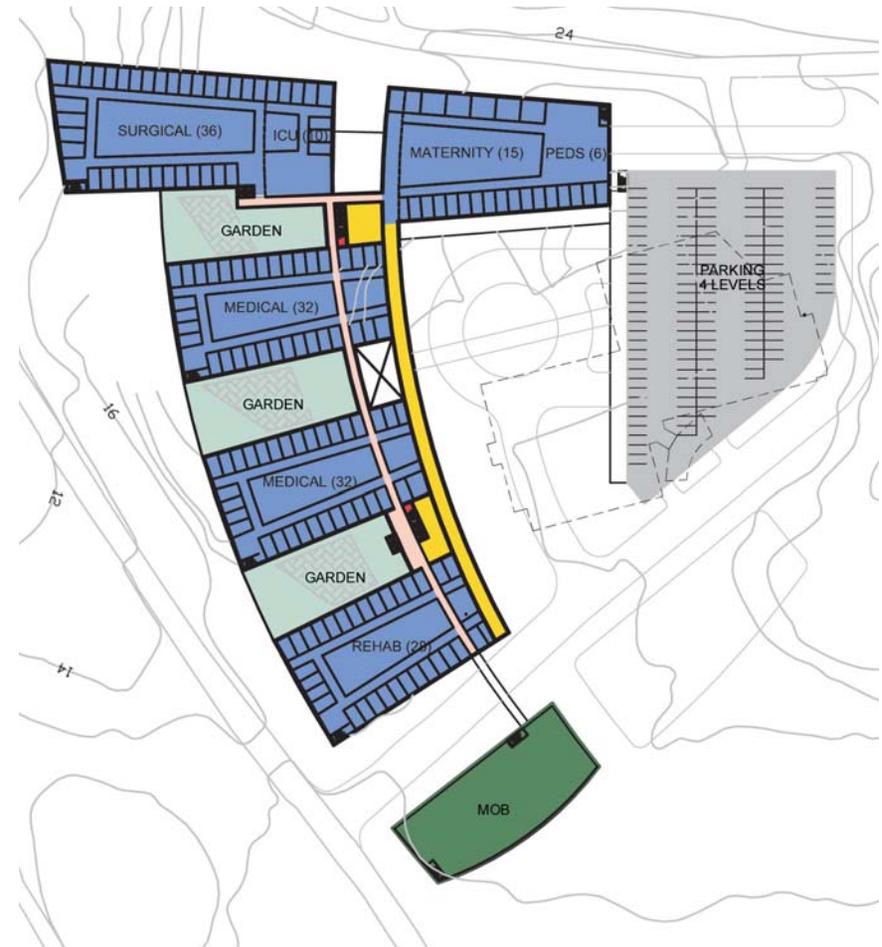
#### **a. Options - King Edward VII Memorial Hospital Site**

##### **Level 2**

- All inpatient beds are accommodated on one level.
- Typical inpatient units are planned based on a 32 bed unit model.
- Intensive Care Unit (ICU) is located directly above the Emergency Department, the Surgery Suite and diagnostic zone for direct transport of the most critical patients. ICU is also central to all inpatient units.
- Two Medical Units are provided; they are located adjacent to the ICU in order to serve as a step-down area for appropriate medical patients.
- Surgical Unit is located directly above the Surgery Suite.
- The Rehab Unit the Rehab is vertically stacked above the Rehab/Physiotherapy Department; although not immediately adjacent to the Surgical Unit (36 beds required); Rehab may flex to accommodate Surgical unit overflow as needed;
- Maternity and Pediatrics pavilion is located in a separate inpatient tower with distinct separation from the general Medical/Surgical units; proposing the development of a separate identity for Women's Services Centre.
- Inpatient elevators provide discreet access from upper floors and connect to these service areas.
- Agape beds are located in a freestanding home-like setting but are not physically attached to the main Hospital.



**3. Acute Care Hospital**  
**a. Options - King Edward VII Memorial Hospital Site**



**Level 2**



### **3. Acute Care Hospital**

#### **a. Options - King Edward VII Memorial Hospital Site**

##### **Implementation Schedule**

The Planning and Design phases for the proposed scope of work will continue into the beginning of 2007. The final Estate Master Plan documents will be completed in September, 2005. The preparation of a detailed Functional Programme will require approximately 6 months. It is expected that Facilities Design will occur during 2006 and the first quarter of 2007.

Construction of the Replacement Hospital at the existing KEMH site can not begin until the existing Continuing Care Facility and Nurses Residence are relocated in order to gain access to the site for the proposed new construction. A timely decision regarding the relocation sites, project funding source, and operational/ownership model is extremely critical to implementing the Estate Master Plan schedule.

Continuing Care Facilities (132 beds total) must be developed on two of the Campuses of Care as soon as possible. The Nurses Residence would be relocated to the KEMH site across the street from the main hospital (assuming that the staff parking can be temporarily relocated to the Botanical Gardens' arena site). The earliest feasible date for opening these new facilities is the first quarter of 2008. Prior to the demolition of the facilities, however, the Central Utility Plant connections to the existing hospital must be relocated.

As a result, construction on the new acute care hospital would not be able to begin until the third quarter of 2009. The hospital could be occupied by the beginning of 2013. Demolition of the existing hospital would occur later that year, with final construction of the new staff and patient parking structure completed by 2015.

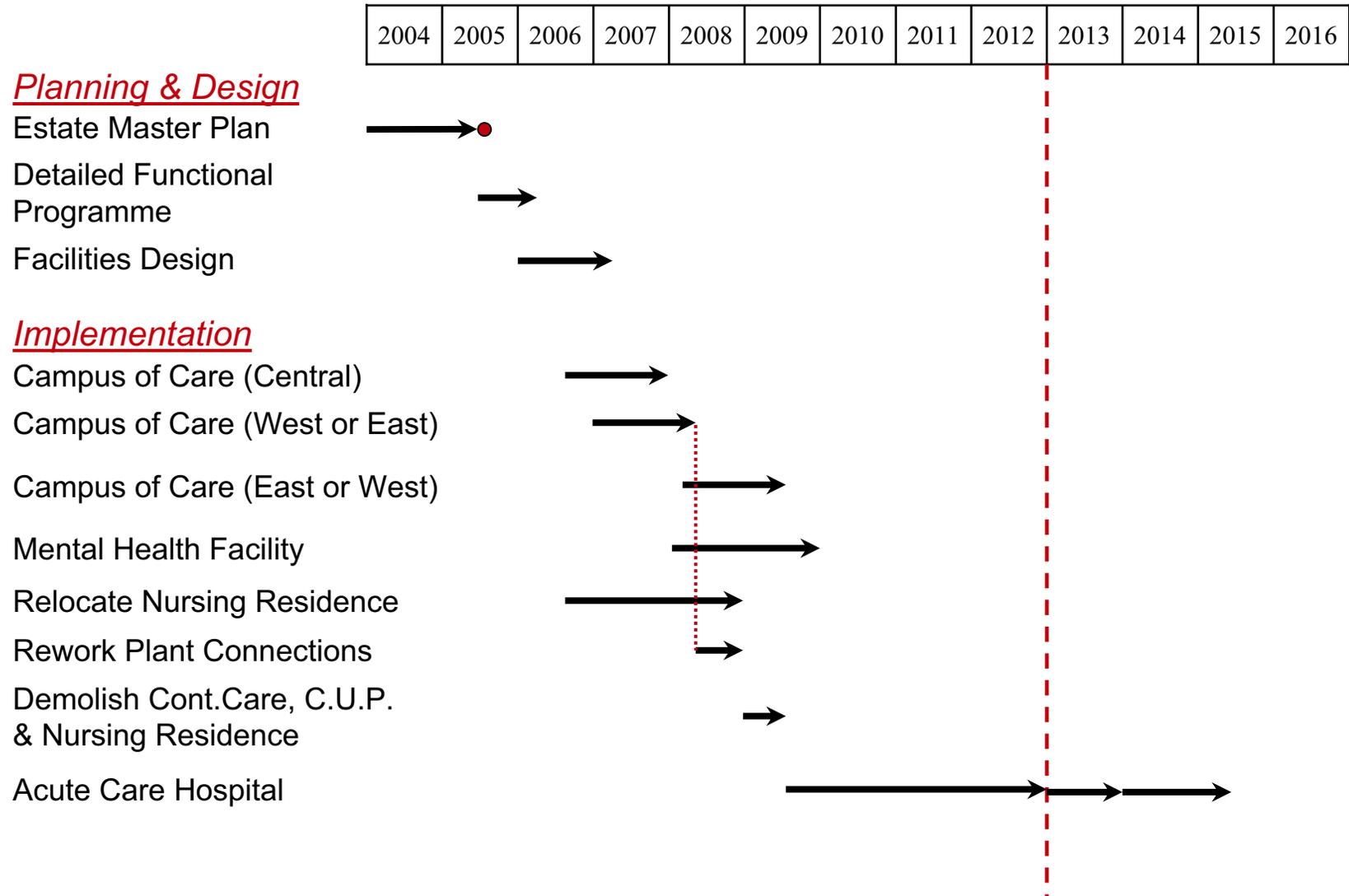
The construction of the remaining Continuing Care Facility, Group Homes, Primary Care Centres, and new Mental Health Hospital could occur at any time during the same period if funding were in place and cash flow was adequate.

All components of the Estate Master Plan would be implemented by the end of 2015, which is three years beyond the critical period identified during the Comprehensive Strategic Review.



### 3. Acute Care Hospital

#### a. Options - King Edward VII Memorial Hospital Site





## 3. Acute Care Hospital

### a. Options - King Edward VII Memorial Hospital Site

#### Strengths

- Maintains existing site location with minimal land acquisition
- Adjacent to current healthcare community of Physicians and Agencies
- Road network can accommodate Hospital traffic

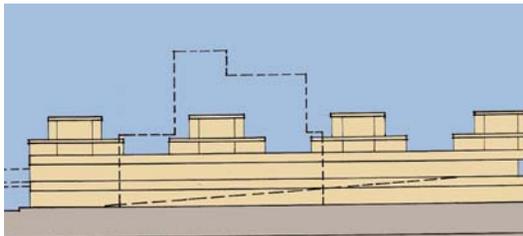
#### Weaknesses

- Requires acquisition of part of the Botanical Garden site (construction staging & packing)
- Significant Hospital disruption due to site work in and around existing hospital
- Extended Schedule for completion due to phasing (4-5 yrs) is beyond identified critical stage
- Premium cost due to extended schedule
- Requires immediate implementation of Campuses of Care (Continuing Care Component)

#### Qualitative Risk:

It is important to note that there are considerable risks associated with the KE.C. "Crescent" Replacement Hospital Option. These include but are not limited to both quantitative and qualitative risks (refer to separate PriceWaterhouseCoopers Report regarding the Quantitative Risks). The primary Qualitative Risks include:

- Disruption of Ongoing Hospital Services
- Significant Noise Control Disruption
- Airbourne Particles / Infection Control Concerns
- Site Accessibility during Construction
- Vibration and its Effect on Hospital Services
- Time and Scheduling Constraints





**3. Acute Care Hospital**  
**a. Options - King Edward VII Memorial Hospital Site**

OBJECTIVE	BENEFIT	SCORE										#	HIGH SCORE CRITERIA	
		LOW SCORE CRITERIA 0 ← → 10												
AFFORDABILITY														
	Site Availability	High \$ Cost									8		4.50	No Cost \$ to BHB
	Total Project Cost	High Project \$ Cost	1											Low project \$ Cost
TIMELINESS														
	Schedule to Completion	15 years								6			6.00	5 years
	Project Implementation Risk	Delays								6				No Delays
QUALITY OF CARE														
	Impact on Current operations	Disruptions				4								No Disruption
	Impact on Patients	Decreased Confidence/Use								6			6.67	Increased Confidence/Use
	Programme Requirements	Compromised										10		Meets Needs
EFFICIENCY														
	Functional Layout	Compromised									8			Preferred
	Future Flexibility	No Flexibility									8		8.00	Easily Expanded/Renovated
	Movement	Long Travel Distances									8			Short Travel Distances
DESIGN IMAGE														
	Site Image	Negative Impact										9		Positive impact
	Building Image	Institutional									8		8.50	Healing Environment
FINANCE														
	Revenue Potential	Lost Revenue								5				Increased Revenue
	Operational Costs	Increased Costs								5			5.67	Decreased Costs
	Ability to Fundraise	Status Quo/Long Delivery									7			New Image/Timely Delivery
PUBLIC ACCEPTANCE														
	BHB Staff	Low Acceptance										2		High Acceptance
	General Public	Low Acceptance										7		High Acceptance
	External Agencies/Gov't	Low Acceptance											10	High Acceptance
	Physician Community	Low Acceptance									5			High Acceptance
											<b>TOTAL</b>	<b>45</b>	<b>MAXIMUM SCORE (70)</b>	





### 3. Acute Care Hospital

#### b. Evaluation / Recommendation

##### Public Opinion

Public forums were held with BHB staff and General Public in June 2005 (two staff forums and six public forums). Surveys were conducted (via website, at the public forums and via telephone) to gauge public opinion for each of the three options. Support was greatest for remaining at the King Edward VII Memorial Hospital site despite the many challenges and risks that would be associated with this option.

Support for Developing Campuses of Care	Percent of those in Favour
Staff Forum Surveys	100%
Public Forums	98%
Phone Surveys	80%

Preference for Acute Care Hospital Site	Percent of those in Favour
Staff Forum Surveys	51% favour Arboretum
Public Forums (Week 1)	67% favour Arboretum
Public Forums (Week 2)	67% favour KEMH
Public Forums (Week 3)	85% favour KEMH
Phone Surveys	70% favour KEMH





## 3. Acute Care Hospital

### b. Evaluation / Recommendation

#### Qualitative Risk Assessment

It is important to note that there are considerable risks associated with building the new hospital on the existing site:

- Disruption of Ongoing Hospital Services - The potential disruption to ongoing Hospital Services cannot be underestimated. All services to the existing hospital will have to be provided with redundant power servicing to minimize the potential for utility loss due to demolition of adjacent structures. Certain procedures may need to be curtailed or limited to certain time periods to minimize risk to patients.
- Significant Noise Control Disruption - Given the current identified schedule, the KEMH site would be under construction for between 7-9 years, both for the construction of the new hospital and the deconstruction of the existing hospital once the new hospital is open. Constant noise will be an issue for patients (quality of care) and will be disruptive to staff. Certain procedures that are noise sensitive will either be limited to specific time periods, or construction will have to be limited during hours of operation (this will increase capital costs and potentially lengthen the construction period).
- Airbourne Particles / Infection Control Concerns - Infection Control is a significant issue in all hospitals today independent of a hospital that is immediately adjacent to a construction site. From the Comprehensive Strategic Review, issues with regards to Infection Control have already surfaced, these will be compounded many times over during construction. Detailed protocols/additional staff may be required to combat airbourne particles (dust and dirt) which will inevitably be tracked into the facility and through openings / mechanical distribution. This may involve additional filters/changing of filters, and additional environmental services staff to undertake additional housekeeping.
- Site Accessibility during Construction - The western half and the northern edge of the existing KEMH site will be a construction zone and access to the Hospital will largely have to occur from Berry Hill Road. The ability for access and to drop off near the current entrance while still viable may prove difficult with the anticipated congestion on the site. Consideration may need to be given to providing an expanded shuttle service to the Hospital front door for patients who need to either park on the watercatch or in the temporary parking at the Arena.
- Vibration and its Effect on Hospital Services - With construction occurring on the west and north sides of the existing Hospital within 10m, there will be issues of vibration transfer both during demolition and construction. This may restrict certain diagnostic equipment to only be used during set time periods and may necessitate additional calibration.
- Time and Scheduling Constraints - It is not uncommon for Hospitals to provide expanded hours of service to compensate for the limitations that construction places on the ability to provide ongoing services. This may mean expanding certain service lines into the evening or on weekends.



### 3. Acute Care Hospital

#### b. Evaluation / Recommendation

##### Capital Cost Estimate

Item	Arboretum \$	Botanical Gardens \$	King Edward Memorial Hospital \$
Acute Care Hospital	470,380,000	468,874,000	505,846,000
Medical Office Building	40,968,000	40,968,000	40,968,000
Mental Health	70,054,000	70,054,000	70,054,000
Continuing Care - East Campus	27,767,000	27,767,000	27,767,000
- West Campus	31,073,000	31,073,000	31,073,000
- Central Campus	16,677,000	16,677,000	16,677,000
Staff Housing	28,601,000	28,601,000	28,601,000
<b>Total Capital Cost (June 2005 dollars)</b>	<b>\$685,520,000</b>	<b>\$684,014,000</b>	<b>\$720,986,000</b>

- (a) Financing costs excluded
- (b) All costs are in Bermudian dollars





### **3. Acute Care Hospital**

#### **c. Recommended Direction**

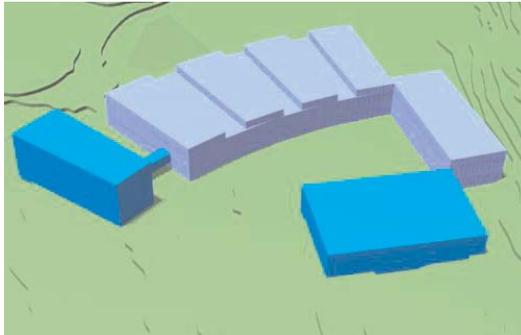
##### **Recommendation**

Upon review of all of the factors that affect the delivery of quality healthcare to Bermuda, the Project Steering Committee firstly reinforced the original decision that the AR.A - "Garden Terrace" Replacement Hospital Option would best serve the long-term needs of healthcare, but secondly recognized that time is of the essence, and due to considerable public opposition to using any parkland for a hospital site, that the prudent decision would be to develop the KE.C - "Crescent" Replacement Hospital on the existing King Edward VII Memorial Hospital Site. In late June 2005, the Bermuda Hospital Board endorsed this recommendation.



### 3. Acute Care Hospital

#### c. Recommended Direction - King Edward VII Memorial Hospital Site



The Steering Committee directed the Estate Master Plan Team to further develop the preliminary planning and design concepts for placing the new Acute Care Hospital on the existing KEMH site with the following modifications:

- Explore ways to accelerate the implementation schedule
- Eliminate the Parking Structure to the East
- Provide access to Emergency from Point Finger Road rather than Berry Hill Road

Planning revisions have been made to the Estate Master Plan document to reflect these changes.

By placing the Parking Structure beneath the Acute Care Hospital, the site that was originally allocated for the multi-storey parking deck now becomes a future development parcel. Initially this large area could be utilized as additional open space as well as specialty surface parking for the adjacent Women's Center. In the future, the area could become the site for new building programmes, new expansion parking structure, or, in conjunction with a portion of the Botanical Gardens, a future replacement hospital site in 40+ years.

These modifications also allow for the acceleration of the implementation schedule by 2 years, since demolition of the existing hospital is not necessary for accommodating the 2015 programme needs. However, unless a timely decision regarding the relocation of the existing Continuing Care Facility and Nurses Residence (required for gaining access to the proposed Acute Care Hospital site) is made, the 2 year project advancement would not be realized.

Since the Acute Care Hospital is built into a sloping site, both the Ground Level and First Level have immediate access to grade. In the revised plans, the organization concept for the building was modified so that the Diagnostic areas occur on the Ground Level and the Clinics on Level 1. As a result, Emergency now has direct access from Point Finger Road by way of the existing curb cut and road that is used to access the current Continuing Care Facility. The existing entrance road from Point Finger Road continues to serve as the main hospital entrance access, with a secondary point of entry from the existing curb cut on Berry Hill Road.



### 3. Acute Care Hospital

#### c. Recommended Direction - King Edward VII Memorial Hospital Site



Site Plan



### 3. Acute Care Hospital

#### c. Recommended Direction - King Edward VII Memorial Hospital Site

##### Lower Levels 1 & 2

- Lower Levels 1 & 2 are subterranean and provide parking on each level.

##### Ground Level

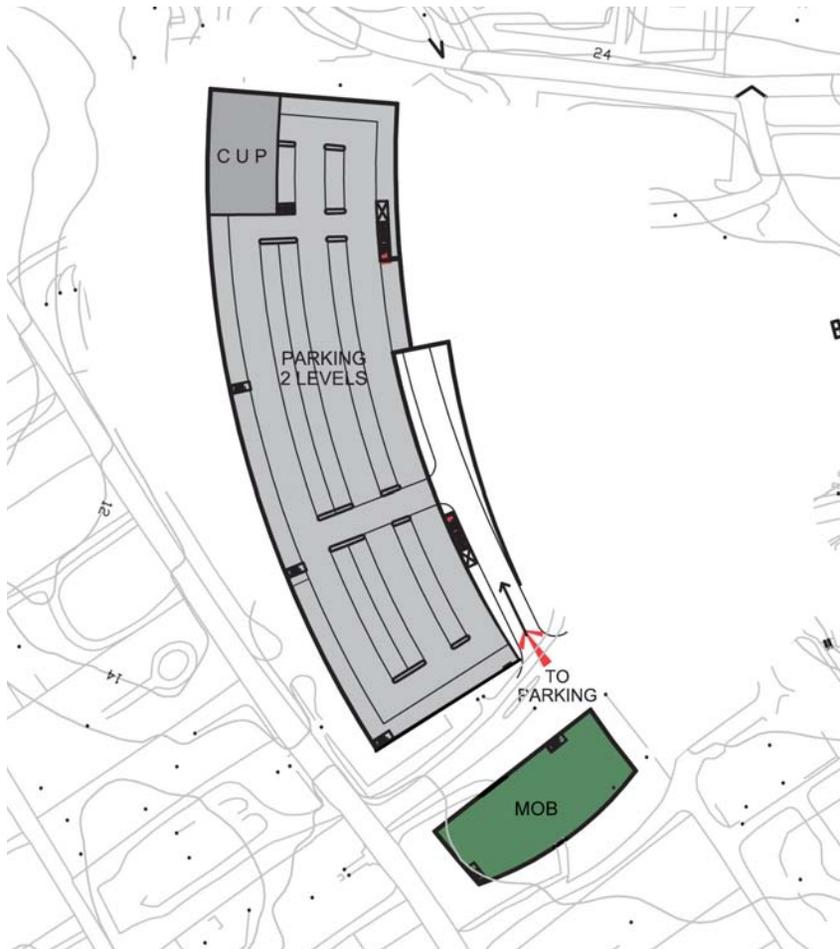
Ground Level is configured to provide diagnostic hub along front/public leg of the "L" shaped plan while Support Services are consolidated in the "back" leg of the new "L" shaped facility.

- On this level designated external access for the Emergency Department is provided, separated walk-in patients and ambulance traffic from general site traffic to a designated zone; with separate walk-in and ambulance entrances.
- Interior circulation is managed by two distinct parallel corridors separating outpatients and public from acute patient and clinical support circulation areas. As well as zone the diagnostic areas from the administrative areas.
- The Diagnostic Hub consolidates Imaging/Radiology, Surgery and Cardiology in one location is located immediately adjacent to Emergency Services. Procedure areas and the main Surgery Suite is developed on the concept of a flexible zone where related Diagnostic services may be developed to cross-utilize procedure space as patient acuity and technology enable this concept. (i.e. future Invasive Cardiology). Sterile Processing is located directly adjacent to the Surgery Suite and is connected by an internal corridor.
- This plan also provides future expansion space to accommodate future services. (i.e. Radiation Oncology and a designated outpatient entrance for future growth.)
- Support Services included towards the back of facility with a designated service entrance include: Material Management, Laundry, Environmental Services, Pharmacy, Bulk Storage, Facilities and Bio-Med are located on a service corridor. The Central Utility Plant is also located here.
- The Support Service zone is configured for direct access for delivery vehicles as well as direct distribution of supplies to the facility without mixing traffic with patients and public users.
- Laboratory/Pathology is located on this level with convenient access to the exterior for courier access. The morgue function is consolidated/attached to the Lab/Pathology, with access to the dock area. Elevators and pneumatic tube will connect the Laboratory and Pathology to all intake and diagnostic services, and inpatient units.

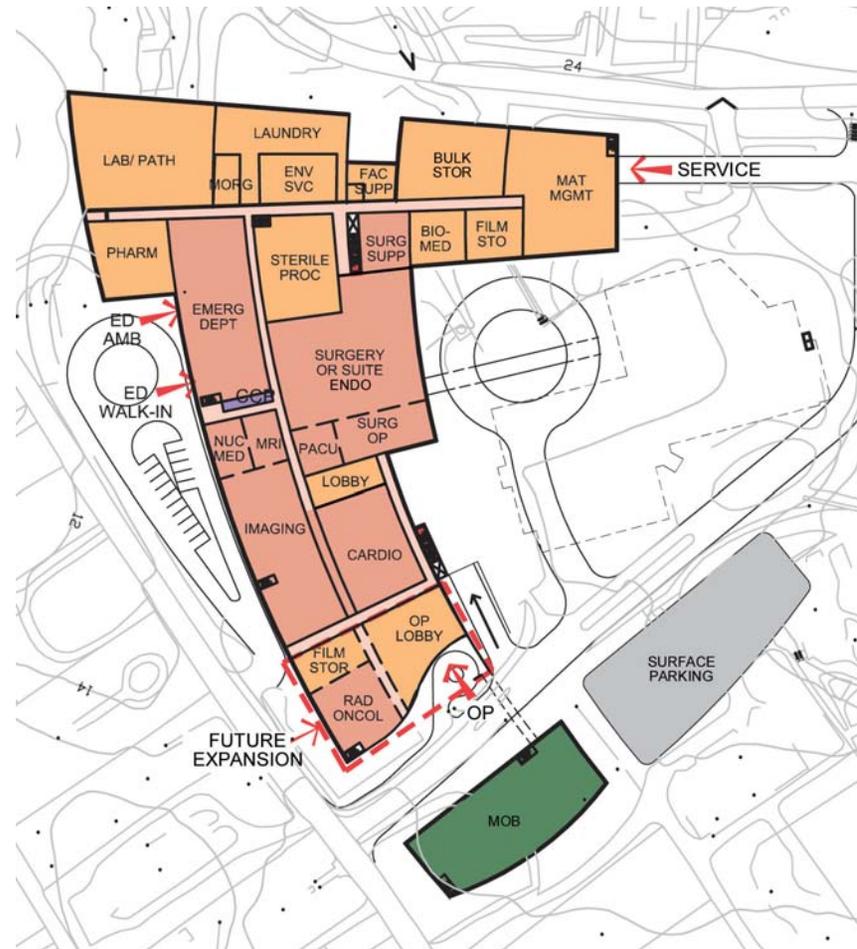


### 3. Acute Care Hospital

#### c. Recommended Direction - King Edward VII Memorial Hospital Site



Lower Level 1 & 2



Ground Level



### 3. Acute Care Hospital

#### c. Recommended Direction - King Edward VII Memorial Hospital Site

##### Level 1

The Level 1 provides consolidated outpatient services along the public building face and provides administrative services on the perimeter of this level.

- Upon entry, high volume Outpatient Services and Public/Education service visitors are peeled off from the main lobby; other patients and visitors utilized designated elevators providing direct access to the Diagnostic Hub and the inpatient units.
- Food Services may have a designated delivery area if desired; the staff dining area is accessed off the general use corridor.
- Medical Staff facilities and clinical staff support areas are located off of the general/staff corridor convenient to a staff entry point.
- Administrative services on the perimeter of each leg of the "L" shaped plan include: Executive Administration, Health Records, Information Services, Human Resources and Employee Health and Finance, Home Care and Quality Assurance & Risk.
- The Chapel is located convenient to Emergency Department, Surgery, and ICU.
- The main public concourse connects to the future MOB.

##### Level 2

- All inpatient beds are accommodated on one level.
- Typical inpatient units are planned based on a 32 bed unit model.
- Intensive Care Unit is vertically connected to the Emergency, Surgery Suite and diagnostics zone for direct transport of the most critical patients.
- Surgical Unit is located with convenient access to elevators serving the Surgery Suite.
- The Rehab Unit is located above the Rehab/Physiotherapy Department; and adjacent to the Surgical Unit; Rehab may flex to accommodate Surgical unit overflow as needed.
- Two Medical Units are provided; they are located above the diagnostic hub.
- Maternity and Pediatrics is located in a separate pavilion with distinct separation from the general Medical/Surgical units; develop identity for Women's Services Centre.
- The Support Service corridor is configured for discreet distribution of supplies to the facility without mixing traffic with patients and public users.

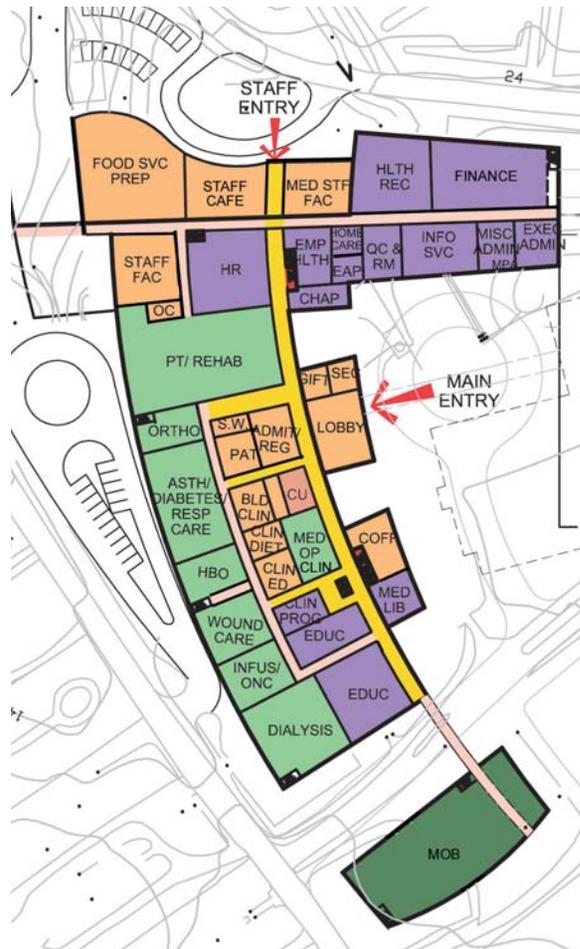
##### Level 3

- Administrative space for the Ministry of Health is located in the pavilion setting.



### 3. Acute Care Hospital

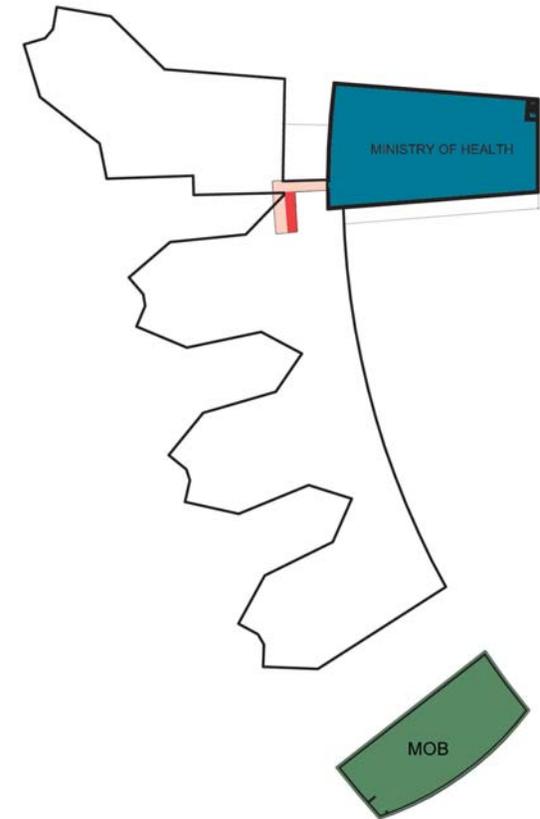
#### c. Recommended Direction - King Edward VII Memorial Hospital Site



Level 1



Level 2



Level 3



**3. Acute Care Hospital**

**c. Recommended Direction - King Edward VII Memorial Hospital Site**





## 4. Campuses of Care

The development of "Campuses of Care" is a critical component to achieving a comprehensive Estate Master Plan that addresses the total continuum of care for the citizens of Bermuda. Significant benefits of this "satellite facilities" approach include:

- Healthcare delivery is expanded throughout the island
- Services are closer to the patients, family, and caregivers
- Dispersed facilities can better respond to potential natural disasters
- Routine medical care can be provided outside of an "Emergency" environment
- Continuing Care Facilities are better suited in a community setting
- Group Homes are better suited in a community setting

Three sites were identified for further development evaluation:

- Central Campus - Mid-Atlantic Wellness Institute Site
- West Campus - Port Royal Site
- East Campus - Southside St. David's Site



Central Campus



West Campus



East Campus



## **4. Campuses of Care**

### **a. Central Site**

The Central Campus of Care will be developed on the Mid-Atlantic Wellness Institute site that is owned by the Bermuda Hospitals Board. Currently, the Mental Health Hospital has excess space, a phasing plan can be implemented that would allow for construction of the new replacement hospital to the north of the main building complex. Once completed, the balance of the existing hospital buildings can be demolished. The new site that is created will be sufficient in size to accommodate a 72-bed Continuing Care Facility, a cluster of Mental Health Group Homes for 60 patients, and a Primary Care Centre.

The site will also be developed to include an outdoor recreation area that can be utilized by the community as well as the Mid-Atlantic Wellness Institute patients. Tree buffers and resident garden areas will help to transition the existing site from an institutional setting to a neighborhood community.



**4. Campuses of Care**  
**a. Central Site**





## **4. Campuses of Care**

### **b. West Site**

The West Campus of Care should be developed on property central to Barnes Corner and Somerset Village. One concept site selected, owned by the Bermuda Land Development Corporation, located near Port Royal in order to test the programme fit with the size of the property. Part of this property has also been identified as a potential site for Senior Citizens' Housing.

This potential site would be sufficient in size to accommodate a 72-bed Continuing Care Facility, a cluster of Mental Health Group Homes for 60 patients, and a Primary Care / Wellness Centre. The proposed location adjacent to the potential Senior Citizens' Housing development would be very appropriate and assist in the creation of a community neighborhood character.



**4. Campuses of Care**  
**b. West Site**





## **4. Campuses of Care**

### **c. East Site**

The East Campus of Care would ideally be developed on property central to the Swing Bridge at Kindley Field Park and north of the Airport along St. David's Road. A potential concept site selected, owned by the Bermuda Land Development Corporation, that is located adjacent to White's Grocery Store in order to test the programme fit with the size of the property.

This potential site would be sufficient in size to accommodate a 72-bed Continuing Care Facility, a cluster of Mental Health Group Homes for 60 patients, and a Primary Care / Wellness Centre. The proposed location adjacent to White's Grocery Store and other Senior Housing in the general area would be very appropriate.



**4. Campuses of Care**  
**c. East Site**

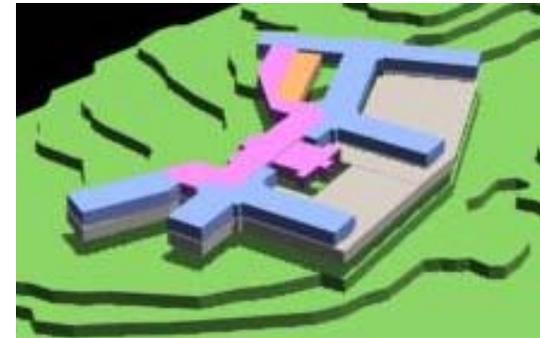






## 5. Mid-Atlantic Wellness Institute

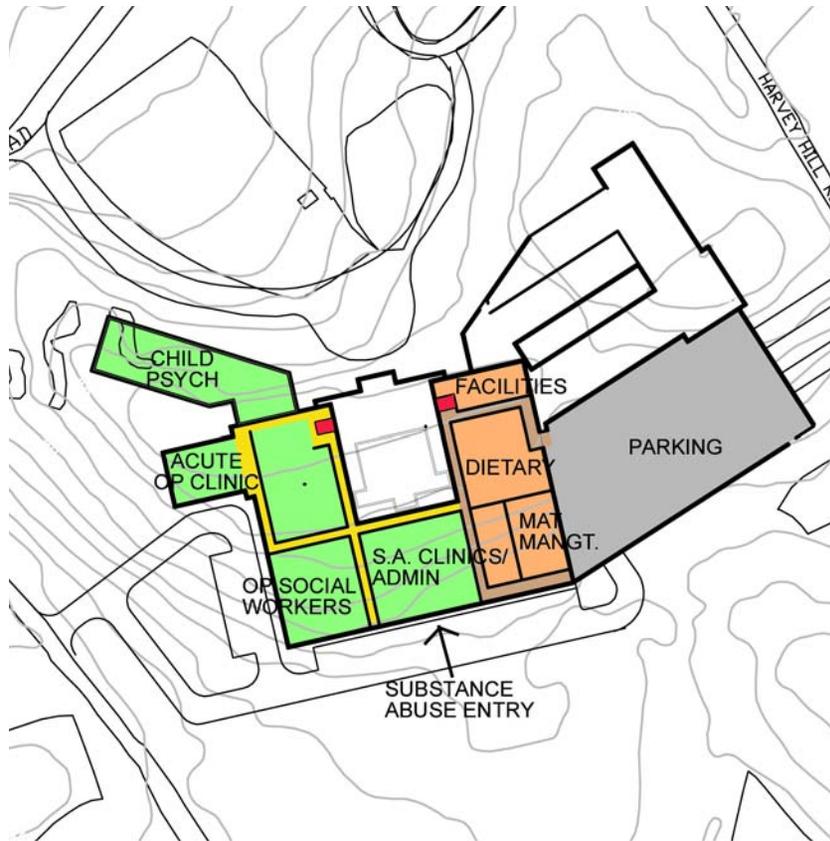
The new Mid-Atlantic Wellness Institute will be located along the ridge line on the north quadrant of the site. The patient wings will flank the existing manor house and auditorium. Main arrival will be from the north, rising up to the existing manor house with visitor parking next to the entry. The bowl shaped open space created by this organization can be used for recreational purposes by the facility occupants and the adjacent community alike. The existing salvaged buildings will be renovated to create interior and exterior common spaces. A central circulation street links all the major programme components to the main entry. Outpatient services are benched under the main level and have a separate arrival at grade on the south side of facility. Vertical circulation between the two levels will be centrally located to minimize security issues and support a simple clear circulation system. All the patient units will have secure and dedicated exterior courts for treatment and recreation. The primary orientation of all the patient units and their courtyards is to the south with panoramic ocean views. The efficient use of the sloped site creates a low one storey massing effect that helps wed all interior spaces directly to the landscape surrounding it.



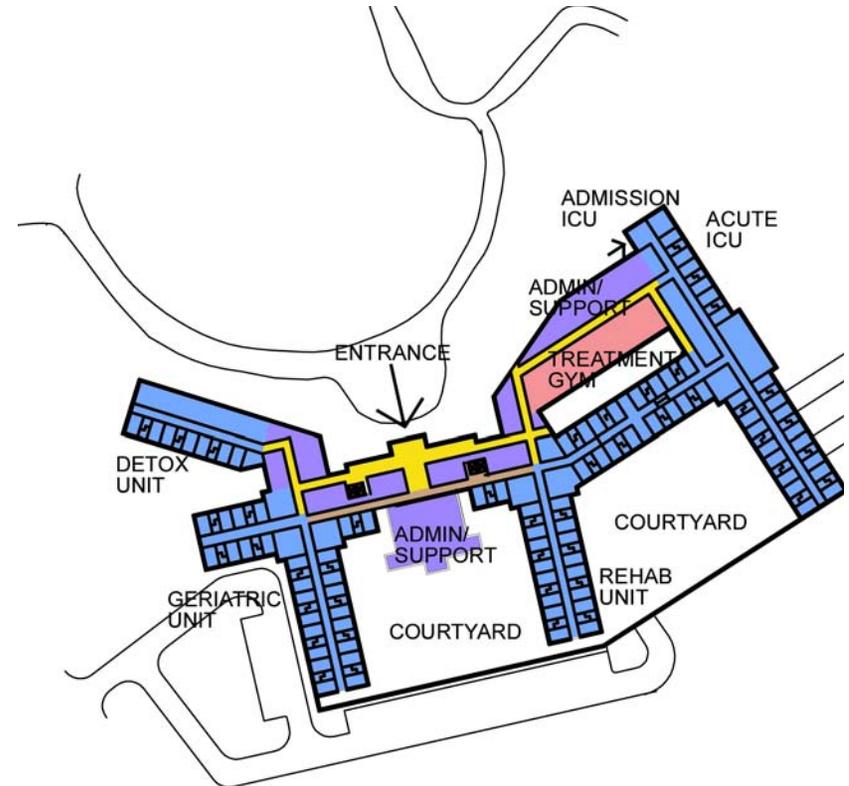


**5. Mid-Atlantic Wellness Institute**





**Lower Level**



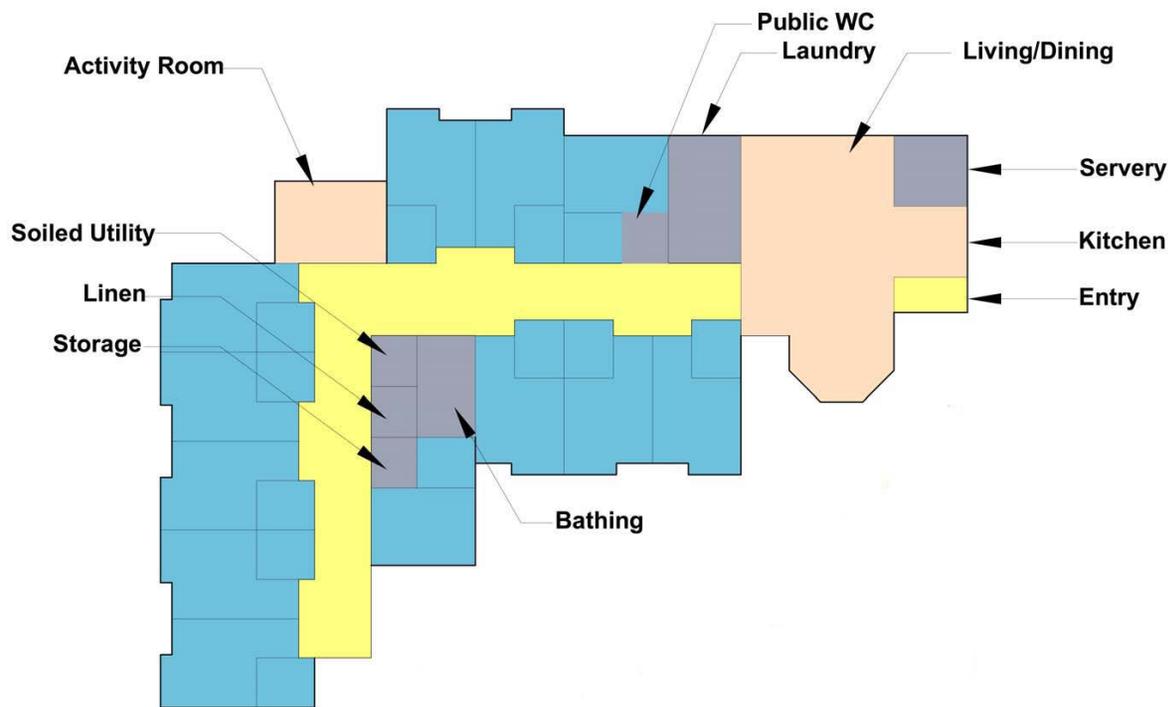
**Ground Level**





## 6. Continuing Care Facilities

The Continuing Care Facilities will be single storey, twelve bedroom units with the amenities of home that will include a separate Living Room, Kitchen, Dining Room and Laundry. The 12-bed units will be arranged on the various sites around resident gardens. The concept is to provide as much long-term flexibility as possible; units might be used for Dementia population one year, as a step-down unit or as a continuing care unit. The “House Concept” provides a non-institutional atmosphere, while at the same time permitting the standard of care required by the patient. The goal is to provide residents with as much normalcy as possible; replicating the environment familiar to them. Each of the Campuses of Care could accommodate up to 72 beds.



Central Campus



West Campus



East Campus



## 7. Staff Housing

The Bermuda Hospitals Board (BHB) currently provides a variety of staff housing to address the needs of ex-patriate staff members. The current housing stock consists of several houses and the Queen Elizabeth Nurses Residence. The latter is not suitable due its physical configuration and building condition. It is also located on the King Edward VII Memorial Hospital site where the new hospital is planned to be located.

Initial BHB housing requirements indicated a need for 10-12 private 3 bedroom and (2) bedroom dwellings; 25 - Single bedroom dwellings; 36-studio type dwellings; and a potential 12 bed guesthouse type structure for use by consultants and others servicing the Bermuda Hospitals Board properties and facilities. A dwelling in this context is any individual unit containing a designated kitchen and bathroom facility, regardless of the number of bedrooms or other living spaces.

The site designated for housing was the parcel of property known as the Water Catch, and parking facility immediate north of the existing Nurses Residence on Berry Hill Road. The site consists of 3.7 acres (133,648 square feet). The site development profile is a south facing hill with elevations of 24 Metres (78' Above Sea Level) up to 46 Metres (150' Above Sea Level) at the highest northerly point. The site is bounded by residential structures, except at the southeastern corner where a former residence has been redeveloped for a Doctors' Offices.

The BHB Estate Master Plan does not address the redevelopment or potential upgrades of existing off site residential structures currently occupied by BHB staff.

The Bermuda Plan 1992 Planning statement designated this parcel as Residential 2 with allowable site development and coverage of 20 % for single dwellings and for attached 2 storey type structures. The Plan does not allow multi-level apartment structures within this Residential 2 Zoning. Given the single dwelling residential development pattern of the surrounding properties and due to the development limitations of the Planning statement for this parcel, the design team opted for the maximum number of dwellings with the greatest occupancy allowable.

The greatest housing need is for nursing staff and doctors with families. The plan presented favors fulfilling the 3-Bedroom dwelling unit requirements. These units were seen as a more flexible programme response given the Planning regulations for this property. These units may be utilized for single families or for multiple co-renters. At this time in Bermuda where accommodation is at a premium, many adults will co-share a 3-bedroom dwelling. It is with this design criteria in mind the development plan Housing options is presented for review and confirmation.





### 7. Staff Housing

The development option presented consists of 3 types of 2 storey structures. These consist of three bedroom structures above and either a one bedroom or studio dwelling below for types 'A' & 'B'. Type 'C' consists of two bedroom units at the upper and lower levels. (3) Bedroom units are 1,290 square feet; (2) bedroom units are 1,080 square feet; (1) Bedroom units are 765 square feet; and the Studio units are 540 square feet. There are a total of 8-Three bedroom dwellings, 4-Two bedroom dwellings, 4-One bedroom dwellings, and 4-Studio dwellings

The units types are assemble in pairs and in 5 locations on the site. Each location has sufficient amenity garden space as well as nearby moped parking. Car Parking is also allowed for however it is anticipated that given the relative proximity to the hospital, few residents will require an automobile. A resident's swimming pool and barbeque area is centered on the site - an amenity seen as an additional perk for staff, and an incentive for attracting and retaining capable staff.

The planning development criteria allows for a carefully designed grouping of residential structures and complimentary amenities that mirror adjoining development types, while retaining approximately 1/3 of the property for continued use as an overflow parking facility for hospital staff. As noted earlier a Ministerial Special Development Order may provide opportunity for additional density to be developed on this site, however trying to addressing all of the Bermuda Hospital Boards housing needs on this site will be problematic unless a vertical high rise development in this area is considered acceptable by the community.

Density of the site is restricted due to current zoning. We would recommend that within an application for a Special Development Order for the entire Project, the density of the site be increases to allow for 3 floor walk up type accommodations. Types and sizes provided are as follows:

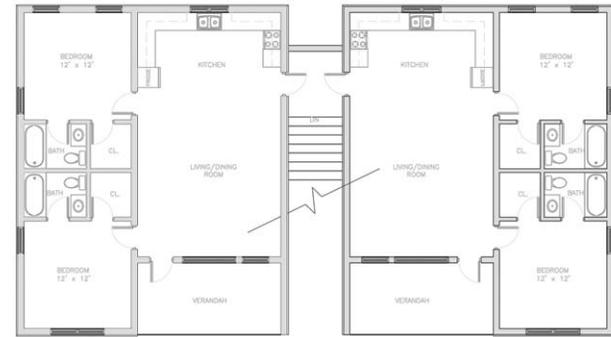
Unit Type	Area (sq ft)	# of Units
Studio	540	4
1 Bedroom	765	3
2 Bedroom	1080	3
3 Bedroom	1290	8
Total		18



7. Staff Housing



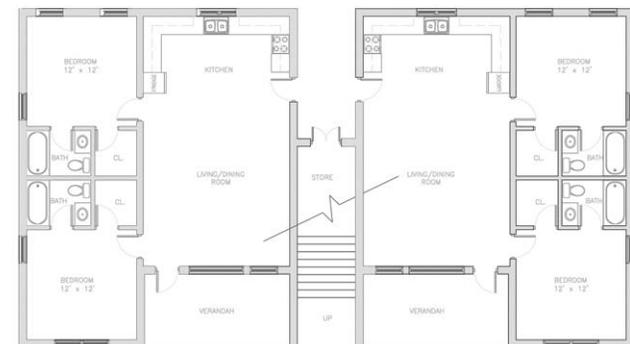
First Floor



First Floor



Ground Floor



Ground Floor

Residential Housing Type A and B

Residential Housing Type C





## 8. Project Implementation

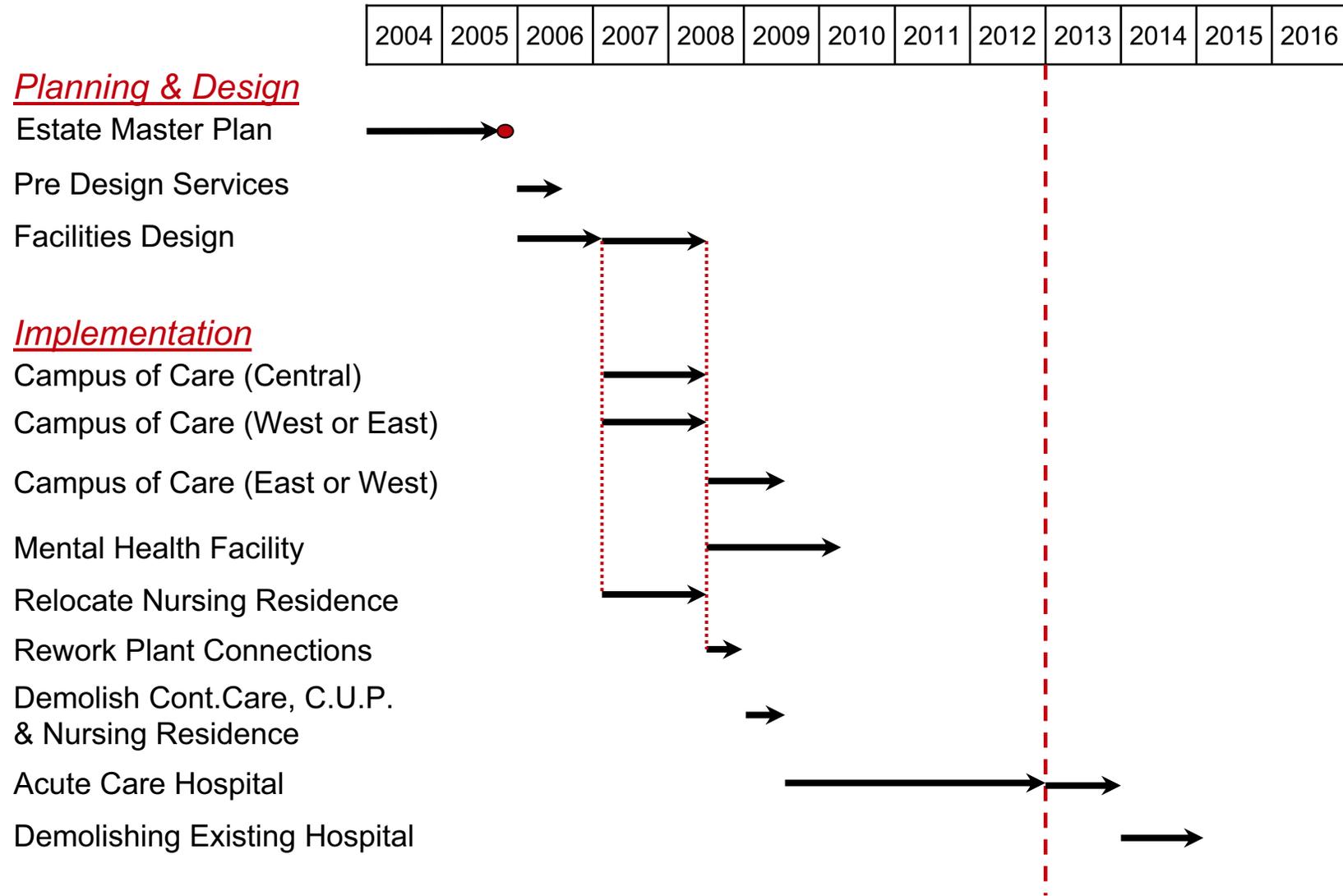
The critical path schedule outlined in this report reflects the anticipated timelines for implementing the Estate Master Plan. All of the components would be completed by the end of 2014, with the majority of the New Acute Hospital completed towards the end of 2012. It should be noted that this schedule is based on timely decisions by all parties.

The Planning and Design phases for the proposed scope of work are expected to continue to the end of 2007. Pre-Design Services are scheduled to begin no later than January, 2006. Facilities Design will occur during 2006 and 2007.

This section should be read in conjunction with Price Waterhouse Cooper's Estate Master Plan Business Case. There are a number of potential opportunities to streamline and shorten the implementation process. This will require a detailed examination of interim solutions for Continuing Care and Staff Housing. Costs (both capital and financing) could be reduced as a result.



## 8. Project Implementation



## 8. Project Implementation

### Capital Cost Estimate

The Capital Cost Estimates presented in this report are intended to provide a realistic assessment of the direct and indirect Capital Cost for the implementation of Bermuda Hospitals Board (BHB) Estate Master Plan study as completed by Cannon Design and their sub-consultants.

It should be noted that the construction cost estimates are based on a Pre-schematic and Master Facilities programme documents and are not a completed set of working drawings that would be utilized by a contractor to bid the project. The estimates provide reasonable cost envelopes within which facility designs can be developed. Further cost estimates based on more detailed design and engineering information may vary from this baseline estimate.

The current estimated Capital Cost for the Preferred Option developed by Cannon Design and their sub-consultants is as follows:

Site	Project Cost (June 2005) \$	Schedule Completion
Acute Care Hospital	505,846,000	2014
Medical Office Building	40,968,000	2011
Mental Health	70,054,000	2011
Continuing Care - East Campus	27,767,000	2014
- West Campus	31,073,000	2012
- Central Campus	16,677,000	2009
Staff Housing	28,601,000	2014
<b>Total Capital Cost <sup>(a&amp;b)</sup></b>	<b>\$720,986,000</b>	<b>2014</b>

(a) Financing, Escalation & Risk costs excluded  
 (b) All costs are in Bermudian dollars



## 8. Project Implementation

### Project Equipment and Furnishings Budget

Program	KE.C	BG.B	AR.A	Baseline
Diagnostic Services	49,635,379	44,982,062	44,982,062	38,777,640
Ambulatory Services	2,769,254	2,509,637	2,509,637	2,163,480
Inpatient Services	26,805,504	24,292,488	24,292,488	20,941,800
Administrative Services	2,600,294	2,356,517	2,356,517	2,031,480
Support Services	4,519,680	4,095,960	4,095,960	3,531,000
Total	\$86,330,112	\$78,236,664	\$78,236,664	\$67,445,400

#### Notes:

1. Baseline Estimate generated by assigning current cost estimates to Cannon Design's BHB Programme dated May 31, 2005.
2. Options BG.B and AR.A reflect Baseline and 4yr of 4% (16%) escalation due to projected 2009 completion.
3. Option KE.C reflects Baseline and 7yr of 4% (28%) escalation due to projected 2012 completion.



## 8. Project Implementation

### Departmental Equipment and Furnishings Budget

DEPARTMENT: EMERGENCY

Room #: ED001  
 Room Name: TREATMENT  
 PRN: 385\_00001

#### *New Equipment*

<u>Description</u>	<u>Manufacturer</u>	<u>Model</u>	<u>PEN</u>	<u>Unit</u>	<u>Est. Cost</u>
Chair, Patient Side			385_00014	Each	\$450.00
Chair, Patient Side			385_00015	Each	\$450.00
Clock, Discrete			385_00013	Each	\$40.00
Curtain, Cubicle			385_00012	Each	\$550.00
Dispenser, Glove Box, Triple	Health Care Logistics	7467-01	385_00018	Each	\$40.00
Disposable Unit, Needle (Sharps)	Kendall Healthcare	851301	385_00003	Each	\$50.00
Flowmeter, Air			385_00017	Each	\$50.00
Flowmeter, O2			385_00006	Each	\$50.00
Light, Exam, Ceiling Mount	Steris	Examiner 10	385_00002	Each	\$2,700.00
Monitor, Physiologic, Hardwired	TBD	TBD	385_000010	Each	\$15,000.00
Rack/Panel, Bin, 35Wx20Hx11D (Bins), Wall Mount	Health Care Logistics	1425	385_000011	Each	\$150.00
Regulator, Vacuum			385_00004	Each	\$650.00
Sphygmomanometer, Oto/Ophth	Welch-Allyn	76797-2P	385_00016	Each	\$1,200.00
Oto Dispenser, Therm, Integral Unit, Wall Mount					
Stool, Physician			385_00007	Each	\$350.00
Stretcher	Stryker	1210	385_00001	Each	\$4,000.00
TV Mounting Bracket, 13"	Peerless	SWM 314	385_00008	Each	\$150.00
TV Set, 13"	Philips	HC9913C	385_00005	Each	\$325.00
Waste Receptacle, Non-Hazardous	Rubbermaid	TBD	385_00009	Each	\$50.00
<b>Room Total</b>					<b>\$26,255.00</b>



## 8. Project Implementation

### Departmental Equipment and Furnishings Budget

DEPARTMENT: IMAGING

Room #: IM001  
Room Name: RADIOGRAPHIC ROOM/GENERAL  
PRN: 385\_00002

#### *New Equipment*

<u>Description</u>	<u>Manufacturer</u>	<u>Model</u>	<u>PEN</u>	<u>Unit</u>	<u>Est. Cost</u>
Allowance to provide Lead Aprons Dispenser, Glove Box, Triple			385_00112	Each	\$2,000.00
Disposable Unit, Needle (Sharps)	Health Care Logistics	7467-01	385_00035	Each	\$40.00
Flowmeter, Air	Kendall Healthcare	851301	385_00022	Each	\$50.00
Flowmeter, O2			385_00024	Each	\$50.00
Hamper, Linen			385_00027	Each	\$50.00
Immobilizer, Portable, Chair			385_00023	Each	\$125.00
Immobilizer, Portable, Cradle	TBD	TBD	385_00031	Each	\$2,500.00
Pole, I.V.	TBD	TBD	385_00032	Each	\$1,500.00
Rack, Apron, X-Ray, Peg Style	Bar Ray Products	60081	385_00037	Each	\$200.00
Radiographic/Flouroscopic Unit General	Philips Medical Systems	Optimus	385_00021	Each	\$300.00
Regulator, Vacuum			385_00019	Each	\$450,000.00
Stool, Step			385_00025	Each	\$650.00
Table, Instrument, Procedure			385_00026	Each	\$125.00
TV Mounting Bracket, Platform Style, Wall Mount	Peerless	WLWB 530T	385_00036	Each	\$500.00
TV Set, Flat Panel, 20"	NEC	LCD2010	385_00020	Each	\$150.00
VCR/DVD	Panasonic	PV-D4752	385_00030	Each	\$1,200.00
Waste Receptacle, Contaminated			385_00038	Each	\$250.00
Waste Receptacle, Non-Hazardous	Rubbermaid	TBD	385_00029	Each	\$85.00
			385_00028	Each	\$50.00
<b>Room Total</b>					<b>\$459,825.00</b>
<b>Department Total</b>					<b>\$459,825.00</b>



## 8. Project Implementation

### Departmental Equipment and Furnishings Budget

DEPARTMENT: SURGERY  
 Room #: SUR001  
 Room Name: OPERATING ROOM  
 PRN: 385\_00004

#### *New Equipment*

<u>Description</u>	<u>Manufacturer</u>	<u>Model</u>	<u>PEN</u>	<u>Unit</u>	<u>Est. Cost</u>
Anesthesia Machine	Datex/Ohmeda	Aestiva 3000	385_00064	Each	\$60,000.00
Cabinet, Supply Storage 48Wx18Dx72H, Glass Doors, w/ Sloped Top and 12" Base	Continental Metal Products	TBD	385_00113	Each	\$2,600.00
Cabinet, Supply Storage 48Wx18Dx72H, Glass Doors, w/ Sloped Top and 12" Base	Continental Metal Products	TBD	385_00070	Each	\$2,600.00
Cabinet, Supply Storage 48Wx18Dx72H, Glass Doors, w/ Sloped Top and 12" Base	Continental Metal Products	TBD	385_00114	Each	\$2,600.00
Cabinet, Warming, Single Compartment, Wall Mount, Electric	Steris	DJ03	385_00066	Each	\$4,450.00
Cart, Anesthesia, Supply			385_00073	Each	\$1,500.00
Cart, Gas Cylinder, Single			385_00074	Each	\$150.00
Cart, Surgical Case			385_00078	Each	\$2,700.00
Cart, Surgical Case			385_00076	Each	\$2,700.00
Cart, Surgical Case			385_00075	Each	\$2,700.00
Cart, Surgical Case			385_00077	Each	\$2,700.00
Clock, Discrete			385_00072	Each	\$40.00
Column, Medical Gas, Anesthesia, Amico Telescoping, Stainless Steel, Ceiling Mounted		Alert 1	385_00109	Each	\$5,500.00



## 8. Project Implementation

### Departmental Equipment and Furnishings Budget

**DEPARTMENT:** SURGERY  
**Room #:** SUR001  
**Room Name:** OPERATING ROOM  
**PRN:** 385\_00004

#### *New Equipment*

<u>Description</u>	<u>Manufacturer</u>	<u>Model</u>	<u>PEN</u>	<u>Unit</u>	<u>Est. Cost</u>
Column/Boom, Service Medical Gas/Electrical, Surgical Field, Articulating Dual Arm w/ Smoke Evac., Ceiling Mount	Steris	CS6002 w/ PES	385_00069	Each	\$24,000.00
Electosurgical Unit			385_00079	Each	\$11,000.00
Flowmeter, Air			385_00080	Each	\$50.00
Flowmeter,O2	Precision Medical		385_00081	Each	\$50.00
Hamper, Linen			385_00082	Each	\$150.00
Hamper, Linen			385_00110	Each	\$150.00
Hypo/Hyperthermia Unit			385_00083	Each	\$0.00
Instruments, Surgical			385_00071	Each	\$80,000.00
Kick Bucket, Procedure			385_00084	Each	\$150.00
Kick Bucket, Procedure			385_00107	Each	\$150.00
Light, Surgical, Dual Head w/ Monitor Arm and CCTV in Lighthead	Steris	Harmony LA 500/500 w/ FP Arm	385_00068	Each	\$42,000.00
MIS Fiberoptic Equipment (excluding scopes)			385_00108	Each	\$60,000.00
Monitor, Physiologic, (sits on anesthesia machine)	Datex/Ohmeda	As/3	385_00085	Each	\$40,000.00
Music System, CD Player w/ Ceiling Speakers	TBD	TBD	385_00067	Each	\$2,000.00
Pole, I.V.			385_00087	Each	\$200.00



## 8. Project Implementation

### Departmental Equipment and Furnishings Budget

DEPARTMENT: SURGERY  
 Room #: SUR001  
 Room Name: OPERATING ROOM  
 PRN: 385\_00004

*New Equipment*

<u>Description</u>	<u>Manufacturer</u>	<u>Model</u>	<u>PEN</u>	<u>Unit</u>	<u>Est. Cost</u>
Pole, I.V.			385_00088	Each	\$24,000.00
Pole, I.V.			385_00086	Each	\$24,000.00
Regulator, Vacuum w/ Bottle Trolley	N/A		385_00089	Each	\$24,000.00
Stand, Mayo, Large			385_00090	Each	\$500.00
Stand, Mayo, Medium			385_00091	Each	\$500.00
Stand, Solution/Basin, Single			385_00093	Each	\$350.00
Stand, Solution/Basin, Single			385_00092	Each	\$350.00
Stool, Pneumatic			385_00095	Each	\$350.00
Stool, Pneumatic			385_00094	Each	\$350.00
Stool, Step, Stacking			385_00096	Each	\$175.00
Stool, Step, Stacking			385_00097	Each	\$175.00
Stool, Step, Stacking			385_00098	Each	\$175.00
Stool, Step, Stacking, 30W			385_00099	Each	\$175.00
Stool/Chair, Pneumatic, Anesthesia			385_00100	Each	\$350.00
Stool/Chair, Pneumatic, Nurse Chart			385_00101	Each	\$350.00
Table, Instrument, Prepw/Rail, 20Wx16D			385_00102	Each	\$400.00
Table, Instrument, Procedure			385_00103	Each	\$500.00
Table, Instrument, Procedure			385_00104	Each	\$500.00
Table, Surgical, Portable	Skytron	6005	385_00089	Each	\$45,000.00
Transfer Device, Patient Roller			385_00105	Each	\$300.00
Waste Receptacle, Contaminated, Hamper Style			385_00106	Each	\$150.00
<b>Room Total</b>					<b>\$401,840.00</b>
<b>Department Total</b>					<b>\$401,840.00</b>





## 9. Next Steps

The Estate Master Plan as described in these documents does not represent a final detailed programme, organizational plan, or design concept. It outlines the new and exciting vision and direction that the Bermuda Hospital Board (BHB) will use to guide the future development of a more integrated healthcare delivery model for the citizens of Bermuda.

We have outlined a schedule that will allow the BHB to present the details of the Estate Master Plan to various Government agencies/representatives over the next 4 - 6 weeks in order to gain the necessary support for its implementation. With Government approval of the Estate Master Plan, the following critical next steps (a 13 month process as outlined) must be undertaken before final design can commence:

### 1 Determine where the Continuing Care Facility and Nurses Residence can be relocated

The development of the Acute Care Hospital on the existing King Edward VII Memorial Hospital site is contingent on the relocation of the existing Continuing Care Facility and Nurses Residence in order to gain access to the site for construction. Work can not begin on the new building until the proposed site is cleared. A timely decision regarding the relocation sites, project funding source, and operational/ownership model is extremely critical to implementing the Estate Master Plan schedule.

### 2 Evaluate Alternative Operational Models within an integrated healthcare system

Alternative operational models should be explored prior to finalizing the functional programme. These feasibility studies should include Materials Management (onsite or offsite facilities, purchasing practices, distribution systems and process), Laundry (onsite or offsite facility, potential expanded service to hotels), Food Services (onsite or offsite facility, production process, distribution system), Surgical Suite / SPD (scheduling, instrument standardization, inventory management, case preparation process), Pharmacy (inventory management, information systems, dispensing). All other departments should also be reviewed for staffing, potential cost savings and other operational efficiencies. The final patient bed capacity plan should be studied in more detail to determine if there is potential for reduction in the average length of stay and number of patient beds to be provided.





## 9. Next Steps



### 3 Develop a detailed room-by-room Functional Programme

Upon approval of the overall final direction (selected) plan for the BHB replacement hospital by BHB steering committee, it recommended that there is a series of concept development meetings to review, discuss, and approve the individual functional zoning and space relationships as defined in the concept plan with the overall staff of BHB (all departments). As preliminary concepts that have been generated to date, from feedback at BHB senior leadership, will now need further definition and most importantly consensus from not only from service line leaders but also from users of each department and all related service representatives that support or directly interact with these areas. This is typically accomplished with a presentation to all hospital departments/staff and then a series (2-3) of scheduled work sessions with selected representatives to discuss department level concepts.

Upon establishing consensus and approval of the concept plan functional relationships as identified above, the next step is programming and developing a detailed room by room functional and space programme with a detailed room by room diagram to support the selected operational model. This task will require establishing user groups, consisting of medical staff, department directors and associated staff, and senior management staff to define space and room by room adjacency requirements. This is an iterative process requiring each group to meet in 3-5 work sessions to define service care model and delivery. As needed, it is advised to organize and schedule site visits to hospitals with different patient care delivery models for staff familiarization and in defining the appropriate facility model for BHB. Based upon decisions made during the programming work sessions, the programme is the working document that includes a narrative description of approved operating concepts, staffing requirements, functional adjacencies, space requirements, and conceptual diagrams.

### 4 Prepare a detailed Risk Assessment study

There are considerable risks associated with developing a new replacement hospital on the existing KEMH site while keeping the current hospital operational. These include, but are not limited to both quantitative and qualitative risks such as: Increased cost due to complexity and longer implementation period, Increased exposure to construction escalation, disruption of ongoing hospital services, significant noise control disruption, airborne particles and infection control concerns, site accessibility during construction, vibration and its effect on hospital services, and time/scheduling constraints. The final design and project scope and budget will need to identify ways to minimize or eliminate these risks.



## 9. Next Steps

### 5 Revise the Estate Master Plan concept designs based on the final programme

The current Estate Master Plan concept designs will need to be validated against more detailed programme development

### 6 Finalize the project scope and cost based on the final programme and design concept

More detailed cost estimates based on additional information will be required in order to finalize the project scope.

### 7 Determine the final funding and procurement process

There are several ways to fund and procure these projects. A final evaluation will need to be documented and direction approved before proceeding with the final design.

The Estate Master Plan has been a diligent and very open and inclusive process. Multiple options were explored and reviewed with staff, physicians, agencies, government, and the general public on numerous occasions. It is the desire of the BHB to continue the momentum and move quickly into the next phase of planning and design.





## 9. Next Steps

