Guam Medical Campus Master Plan

Guam Medical Campus Master Plan

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CHAPTER 1

Project Overview

1. Project Overview

1.1. Introduction

Guam is working toward improving medical service delivery on Guam. Analysis conducted as a part of the *Medical and Public Health Services Delivery Plan* indicates that the Island of Guam has a few significant and growing gaps in the range and quality of healthcare services accessible to island residents. Guam is also facing increasing urgency for more modernized and adaptable healthcare options. The existing public hospital has no room to expand and is struggling with limited capacity for inter-agency connectivity. Therefore, the Government of Guam has prioritized the development of a new hospital and medical campus.

This *Guam Medical Campus Master Plan* explores requirements as outlined by relevant stakeholders. These requirements are used to evaluate possible sites for the future medical campus, develop possible options, and aid stakeholders in reaching a consensus on the appropriate location of a Guam Department of Public Health and Social Services Public Health Clinic, a CDC-rated Public Analytical Testing Laboratory, and a replacement facility for the Guam Memorial Hospital – in short, a medical campus to serve the people of Guam. The goal is to ensure these facilities are co-located on one site with functional and value-improving amenities.

This master plan will include an overview of the project background, details regarding the site selection process, a breakdown of the preferred sites' suitability, and a detailed analysis of the stakeholders' preferred site.

1.2. Background

The population of Guam and neighboring Micronesian islands are fully reliant on the medical infrastructure of Guam. The need for improved medical facilities and the infrastructure required to support these facilities has only grown through the years. A historical review of medical delivery in Guam clearly shows that, as a small and isolated island, Guam is utterly reliant on air and sea transportation for medical supplies, equipment, and specialized medical testing. The island's medical workforce is limited, and many vital procedures are unavailable owing to a lack of specialists or appropriate facilities. Cancer treatments, dialysis, and other common procedures must be completed off-island, with significant cost and delayed care for the patient.

Advanced biomedical testing must be conducted off the island owing to the lack of a *Centers for Disease Control and Prevention (CDC) laboratory*. The absence of such a facility puts the island at a high risk of disease spread, particularly considering the transient military and tourist populations coming to the island from all over the world, increasing the risk of exposure.

Equally challenging, the island's existing medical infrastructure is aging. Most public health facilities have major space limitations, do not meet modern medical facility code requirements, and pose structural hazards. Departments and agencies are scattered, negatively impacting the quality of work and care. Private medical providers struggle to meet demand because of limited staffing and hefty patient loads.

The island's only public hospital, *Guam Memorial Hospital (GMH)*, was built in 1960. Research has indicated that the hospital has struggled for years with space constraints, out-of-code design, vehicular accessibility, and worsening structural conditions. The hospital has faced financial constraints in accommodating medical service growth in the last decade, all while the demand for inpatient hospital beds is rising. Parking lots overflow, specialists are limited, and the traffic bogs down emergency transportation throughout the surrounding neighborhoods.

Meanwhile, the *Department of Public Health and Human Services* has developed programs to address the island's health needs but lacks the facilities to accommodate these programs. As a result, staff and departments are spread across multiple facilities, service accessibility is disjointed, and public health coordination is challenged.

The Government of Guam (GovGuam) and several other agencies have undertaken numerous initiatives to secure funds for medical and public health infrastructure investments, dating as far back as 2010.

In 2012, an *Expansion Feasibility Study* commissioned by the Governor's Office and conducted on Guam Memorial Hospital suggested short- and long-term enhancements to the hospital's deteriorating Z-wing, mitigation of crowded hospital parking, and overall code upgrades to ensure adequate performance in the future. As a result, in December 2012, the Governor's Office ordered the development of a *Guam Medical and Public Health Services Delivery Plan*, using the *Department of Defense's (DoD)* Office of Local Defense Community Cooperation (OLDCC) funding. The delivery plan included an inventory and gap analysis of public and private healthcare services throughout the island.

In 2014, the Department of Interior’s final evaluation identified negative hospital cash flow, revenue problems, and unsustainable service growth. At this point, a fund was developed to collect 60% of gaming tax income for GMH's future development. That same year, the Department of the Navy opened the new Nimitz Hill Naval Hospital, providing state-of-the-art medical facilities for active-duty military, dependents, and retirees.

Shortly after that, in 2015, a privately-owned facility was opened, the Guam Regional Medical Center (GRMC). GRMC offered the public advanced acute care, expanded services, and additional beds, but since its opening, the facility has struggled to hire and keep skilled staff. Ultimately, persistent staffing and budgeting issues have forced the hospital to limit the care it provides. As a result, gaps in medical services and delivery persist.

In 2016, the 33rd Guam Legislature published a *Guam Memorial Hospital Task Force Report*. This document observed national and local healthcare trends, funding, and usage. The findings reconsidered GMH's role in the continuum of health care. The task force report concluded that the existing hospital would ideally be replaced and funded via a public/private partnership effort and/or scaled down to offer a smaller, more specialized set of services. The smaller scale would allow the hospital to become more sustainable and continue to offer high-quality medical care while allowing private providers to fill in the gaps. If accepted, this path of hospital replacement would significantly impact future healthcare investments. A Guam Medical and Public Health Services Action Plan must be developed to address the intent and ongoing, systemic medical and public health care concerns. The update would recommend the ideal options for investing in healthcare infrastructure strategically and prudently. Part of this plan illustrated key milestones and trending factors that

informed the governor and lieutenant governor on the best options to lead Guam in addressing systemic medical and public health concerns.

In 2019 two additional disruptions occurred to Guam's healthcare delivery. First, an electrical fire forced the Department of Public Health and Social Services to shutter one of its primary administrative facilities in Mangilao. Second, the findings of a *U.S. Army Corps of Engineer Facility Assessment*, commissioned by the Governor's Office, strongly recommended a replacement facility for the aging and damaged GMH. A complete replacement was estimated to be more cost-effective than the lengthy repairs and retrofitting required for the facility to continue operating as a hospital following modern standards.

In March 2020, the Coronavirus (COVID-19) pandemic reached the island. GMH was designated as Guam's COVID-19 hospital. Outpatient and elective surgeries were suspended. As the virus spread, several cracks in medical healthcare delivery were exposed. Limited critical resources quickly became points of concern. Contact tracing was difficult and took up valuable labor. Quarantine costs ate into budgets, test samples had to be sent off-island for analysis, and already limited healthcare workforces were under strain to provide safe and speedy care to those in need. Agencies found new ways to coordinate under critical conditions, but facility limitations, inadequate staffing, and gaps in public health education began to show. Additionally, the hospital lost approximately $10M in revenue from suspended services.

As the pandemic unfolded, in May 2020, parts of the plan were delivered. These components included the assessment of the Army Corps of Engineers' report on GMH. Information was obtained through the analysis of existing documents and studies and conversations with the *Guam Economic Development Authority (GEDA*), the *Department of Land Management (DLM), the Guam Behavioral Health and Wellness Center (GBHWC),* and the *Governor's Office.* These insights revealed a clear aim for the future of medical care in Guam.

This *Guam Medical Campus Master Plan (MCMP)* results from different assessments of both the medical delivery services on Guam and the existing conditions of the Guam Memorial Hospital.

1.3. Medical Campus Requirements

The courses of action envisioned in this plan result from a detailed evaluation of healthcare programmatic needs, available sites across the island, and the limitations and requirements of possible site infrastructure. These, combined with input from GovGuam, multiple governmental agencies, and members of the public, established the key criteria for the medical campus site selection.

Key criteria for the medical campus site selection included:

- The use of vacant GovGuam lands and other public lands,
- A site that can accommodate a new and expanded hospital and a modern medical campus,
- Opportunity for air transport needs,
- Long-term site use and accessibility,
- Optimal drive time for members of the public accessing the hospital, and
- Opportunities for collaboration with other agencies.

These key site selection criteria for the plan are fed into the programmatic components discussed below.

1.3.1. Key Program Components

GovGuam had several programmatic requirements identified or specifically requested for incorporation in the MCMP. The assessments confirmed that nine programmatic components and associated capacities would be essential to a new medical campus that would adequately meet Guam's current and future healthcare needs: a 161-bed medical center/hospital, a public health center, a behavior, and wellness center, GMHA administrative space, a pharmacy, a CDC lab, an assisted living facility, a Veterans Administration (VA) facility, and space that could be developed into offices for private medical providers. Table 1-1, on the following page, describes each component in terms of general uses and square footage required, as well as the standards, guidelines, and assumptions used in final facility size recommendations.

Table 1-1. Medical Campus Key Program Components

Facility	Description	Conversion Parameters	Square Footage	Recommendation
Medical Center	Newly constructed to-code 300-bed facility with flex space for 300 additional beds.	2,800 sq. ft. per bed (primary)[1] 300 sq. ft. per bed (flex), Size of a patient room	840,000 (primary space) 90,000 (flex space)	Recommend 930,000 sq. ft. Round up to 1,000,000 sq. ft.
Public Health Center	Additional programming and administrative space for the following departments: Environmental Health (DEH) Public Health (DPH) General Administration (DGA) Senior Citizens (DSC) Public Welfare (DPW)	Determined as necessary recommendations from March 2021	DEH: 15,000 50,000 (DPH) 27,973 (DGA) 17,000 (DSC) 36,351 (DPW)	Recommend 146,624 sq. ft. Round up to 200,000 sq. ft.
Behavior and Wellness Center	An expanded 34-bed facility assumed (based on 17 beds/100,000 people [2])	2,800 sq. ft. per bed	95,200	Recommend 92,500 sq. ft. Round up to 100,000 sq. ft.
GMHA Administration	Same as DGA facility to be housed in the Public Health Center			Recommend 27,973 sq. ft. Round up to 30,000 sq. ft.
Pharmacy	Based on demand associated with a 300-bed hospital facility	22.04 sq. ft. per bed [3]	6,613	Recommend 6,613 sq. ft. Round up to 10,000 sq. ft.
Center for Disease Control Lab	Recommendation from the Guam Economic Adjustment Committee meeting (10/28/2010) due to the lack of an existing CDC lab on-island			Recommend 10,000 sq. ft. 10,000 sq. ft.
Assisted Living Facility	210-bed facility assumed[4]	750 sq. ft. per bed (WHO recommendation)	157,500	Recommend 157,500 sq. ft. Round up to 200,000 sq. ft.

Facility	Description	Conversion Parameters	Square Footage	Recommendation
Veterans Administration Facility	Assume 50-bed facility assumed[5]	2,800 beds per sq. ft.	140,000	Recommend 140,000 sq. ft. Round up to 200,000 sq. ft.
Medical Provider Offices	To accommodate the anticipated 120 Medical Providers	120 sq. ft. per provider	14,400	Recommend 14,400 sq. ft. Round up to 15,000 sq. ft.
Total Square Footage for the Medical Campus				1,765,000 sq ft.

Source: GovGuam 2021, Matrix Design Group,2021

1 Recommended by the American Hospital Association and BSA Life Structures

2 Recommended in the 2018 National Public Health Survey

3 Parameters based on VA hospitals in Florida, Illinois, and Virginia

4 Based on 105 beds/10,000 people recommended by World Health Organization (WHO)

5 Based on VA guidelines

In addition to the primary medical center recommendations, the programmatic components in the rest of 1.3 were identified as desired ancillary services.

1.3.2. Public Health Center

A public health center staffed by the Guam Department of Public Health and Social Services (DPHSS) was outlined as a desired ancillary service. DPHSS already staffs two public health centers on the north and south sides of the island, and a centrally located clinic is overdue. Co-located with the medical hospital would allow collaboration between public health patient care and hospital inpatient care if necessary.

1.3.3. Behavioral Health and Wellness Center

A Behavioral Health and Wellness Center, staffed by GBHWC, was identified as a desired ancillary service. The existing GBHWC facilities do not have options for an inpatient stay for clients who need medical care. The addition to a new Behavioral Health and Wellness Center co-located alongside the hospital would meet a significant gap in care.

1.3.4. Hospital Administrative Space

The existing public hospital has struggled to accommodate appropriate administrative space for Guam Memorial Hospital Authority staff. Therefore, the site and campus plan should include space specifically dedicated to the administrative functions of the hospital.

1.3.5. Pharmacy

A pharmacy was identified as a desired ancillary service to ensure timely and coordinated medication and prescription refills for hospital patients. Co-locating it on-campus with the other desired ancillary services will ensure that it can extend to serve the adjacent public health center and behavioral health and wellness center.

1.3.6. Center for Disease Control (CDC) Lab

Having a CDC lab co-located with DPHSS facilities, and the hospital will ensure timely results for specimens that require testing. The CDC lab is a long overdue service for the island of Guam and will be a desired ancillary service on the medical campus site.

1.3.7. Assisted Living Facility

Guam's elderly population continues to grow, yet there are fewer than three assisted living facilities on the island. The addition of the island's public assisted living facility was identified as a desired ancillary service for the medical campus. Co-locating the assisted living facility on-site with the hospital will ensure that geriatric patients needing regular medical assistance have easy access to the medical facilities.

1.3.8. Veterans Administration (VA) Facility

A VA hospital does not currently exist on the island and has been identified as a desired ancillary service. Many of Guam’s residents are veterans, and providing appropriate medical facilities for them has been listed as a crucial component of the medical campus master plan.

1.3.9. Medical Provider Offices

To assist with revenue and expand service offerings, the addition of private medical provider offices was identified as an important ancillary service for the future medical campus.

1.4. Next Steps

Guam remains a pivotal hub for medical care, but the infrastructure is lacking. Over the past several years, medical providers and public health agencies on the island have faced structural challenges, staffing shortages, and growth rapidly outpacing current facilities. After a long history of medical infrastructure initiatives, the Government of Guam initiated the Medical and Public Health Services Action Plan. The culmination of that plan is this master plan document.

Using trends from 2012 and the assessments from the tasks associated with other 2022 medical action plan reports. With the input of government agencies and public input, this MCMP was developed according to the requested criteria and recommendations to accommodate key facilities and programmatic elements. Details of site selection follow.

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CHAPTER 2

Evaluation of Potential Sites

2. Evaluation of Potential Sites

2.1. Introduction

Selecting an ideal hospital site is critical to the long-term success of any hospital. The location and design of the future medical campus will aid GovGuam as the administration optimizes the allocation of medical resources, supports desired ancillary services, and ensures the financial feasibility of the development. A well-suited site will have room for multiple health-related disciplines and options to expand. The numerous health services co-located on the campus will allow healthcare professionals to produce better professional outcomes and technical developments due to increased co-working and resource sharing. Additionally, the new campus will have ripple effects on the social and economic demands of the area. It will: impact the growth of urban and rural health services, reduce social conflicts, and improve the quality of life for the people of Guam. From the citizen's standpoint, effective hospital site selection will increase access to health care, minimize rescue time, ease medical anxiety, encourage better overall wellness, and promptly address various medical needs.

Matrix Design Group was not responsible for identifying alternative sites for the new public hospital and medical campus, developing site selection criteria, providing the data for assessing site alternatives, and selecting the preferred site. These tasks were the responsibility of the Government of Guam agencies. This section summarizes the process that the Government of Guam completed to assist them in selecting the preferred site for the new public hospital and medical campus.

This chapter outlines the approach to site selection. Additionally, it provides an overview of the top three sites that adequately meet baseline criteria for a possible medical campus: Ypao Point, Adacao Crown Lands, and Eagles Field.

2.2. Site Location Considerations

In the site selection process, one of the biggest factors is location. The location and the facility's appeal affect the market share and long-term success of a new medical campus. Therefore, physical access is quite important. Although the physical location can impact the quality of medical services, the siting of the new medical campus is primarily a strategic factor. A new medical campus will spur significant economic growth, influence citizens' medical care access, and guide surrounding infrastructure development. These are all important factors to consider. However, with the knowledge that an accessible location is a key determining factor in patient utilization, the siting in relation to the dense populations of Guam is perhaps the most crucial consideration that will determine the ultimate business success of the medical center. The site should not be too far north or south to ensure equal access for all villages across the island. Thus, a key site selection consideration was a centrally located site.

Secondarily, medical campus siting has the potential for both beneficial and adverse impacts on the community around it. The consultant team advises GovGuam to consider both types of effects.

Positive effects may include:

- An increase in property value in the surrounding peripheral areas,
- Improved health-related accessibility for the surrounding area population,
- Adequate patient utilization to justify providing specialized procedures or procuring advanced technical equipment, and
- Increased economic development in the vicinity.

Potential adverse effects include:

- Increased traffic flow and congestion, impacting commute times or access to nearby businesses,
- Noise pollution and greater emergency vehicle use in residential areas, and

If the hospital and medical campus siting decision reflects a fully calculated decision-making process and incorporates the best knowledge and research obtained with substantial community collaboration and cooperation, an ideal site will empower the local community and serve the people of Guam effectively.

By using accessibility indicators, locational analyses of medical care centers frequently focus on accessibility and activity-based implications. In this context, the term *accessibility* refers to the relative nearness or proximity of one place to another. Matrix conducted a comprehensive data collection effort based on information provided by GovGuam. The information provided to the consultant team during the Request for Information phase of the assessment required the development of some assumptions, owing to the lack of available real-time information. Therefore, in addition to the medical campus program components summarized in Chapter 1, Table 1-1, the consultant team was directed to assess the following assumptions in the data collection and analysis phase for the medical campus:

- Potential sites should be near an airport, and a helipad is needed on or near the site.
- Potential sites should be evaluated for environmental and cultural constraints that will impact their development.
- The MCMP for the selected site should include phasing that minimizes upfront costs.
- The site should be oriented for excellent access roadways to provide efficient, direct connections to the emergency room/trauma center for emergency vehicles and the public.
- The potential synergy and value of each potential site when co-locating the DPHSS Public Health Analytical Testing Laboratory on-site or near a new GMH medical campus.

2.3. GovGuam Analysis Process of Potential Sites

GovGuam coordinated all data and alternative site options involved in the site selection process for the public hospital and medical campus. The GovGuam agencies involved in the analysis and assessment of the alternative included the Guam Economic Development Authority (GEDA) and the Department of Land Management (DLM). Under the auspices of GovGuam, available vacant public lands were analyzed and ranked based on factors that included: size, jurisdiction, conveyance method, main and secondary access roads, topography, current utility infrastructure, current uses, and planned uses. GovGuam down selected to 14 vacant public land sites for site assessment. The alternative sites that were evaluated included a potential Department of the Navy Net Negative Sites or any Department of Defense (DOD) site, which brought the total number of alternative sites evaluated to 15. Each site was carefully analyzed using criteria such as adequate size, accessibility, topography, and utilities. A summary of the evaluation criteria for each of the 15 alternative sites is included in Table 2-1.

Table 2-1. DLM Alternative Site Evaluation Criteria

Sites	Size (acres)	Jurisdiction	Conveyance Method	Main Access	Secondary Access	Topography	Utilities - on-site/off-site	Current Uses	Adjacent Uses and / Planned Uses
Adacao (Crown)	102	GALC	GALC Lease	Rte. 15	None	hilly with serious depressions	none, none	none	south of training areal
Andersen South	395	GALC	GALC Lease	Rte. 15	None	Level, limestone	none, none	none	south of CLTC land-raceway park, north of private residence
Cross Island Rd	66	CLTC	CLTC Lease	Rte. 17	None	clay soil, hilly access	none, none	none	Chamorro Land Trust commercial and sustainability agricultural leases
Eagles Field	102	Navy	Navy Lease	Rte. 15	None	fairly level	none, none	Sports, Radar	Residential
Existing GMH	16	GMH	Unnecessary	Gov. Camacho	Rte. 14	fairly level, diffline, salt spray	underground, underground, generator	Hospital	Comm/Res.
Finegayan (old FAA)	582	GALC	GALC Lease	Rte. 3	None	Level	none, undetermined off-site	none	Military
Lot 198 Yona	111	CLTC	CLTC Lease	Rte. 4	None	Not Avail.	Limited	Unknown	Residential
Lot 508 Merizo	851	CLTC	CLTC Lease	Rte. 4	None	Not Avail.	Limited	Unknown	Minimal
Lot 7163-R1 Yigo	404	CLTC	CLTC Lease	Rte. 15	None	Slopes	Limited	none	Coral mining
Oka Point	35	CLTC	PL 25-179	Rte. 14	Gov. Camacho	Level	Undetermined on-site	none	Residential
Radio Barrigada	100	Navy	Navy Lease	Rte. 16	None	Level	None	none	Residential
South Finegayan	218	Navy	Navy Lease	Rte. 3	None	Level	?	Residential	Solar Power
Tract 10123 Yigo	30	CLTC	CLTC Lease	Rte. 1	None	Level	Off-Site	Residential	Chamorro Land Trust Residential Infrastructed Subdivision - on-going SUTA applicant
Two Lovers Point	20	CLTC	CLTC Lease	Rte. 1	None	Level	None	none	
UOG Conservation	140	UOG	Legislation	Rte. 10	None	Level	None	Conservation	Education

Source: Guam Department of Land Management (2022)

Among these 15 alternative locations, three were distinguished and identified as most viable by the DLM. In a presentation by DLM on April 13, 2021, to the Governor of Guam, the following three potential sites were unveiled as the best-preferred options in Figure 2-1:

- Ypao Point/Old Guam Memorial Hospital Site – 35 acres
- The Adacao Land Parcel (Crown Lands under the control and ownership of GALC) – 102 acres
- Eagles Field (under the control and ownership of the U.S. Navy) – 102 acres

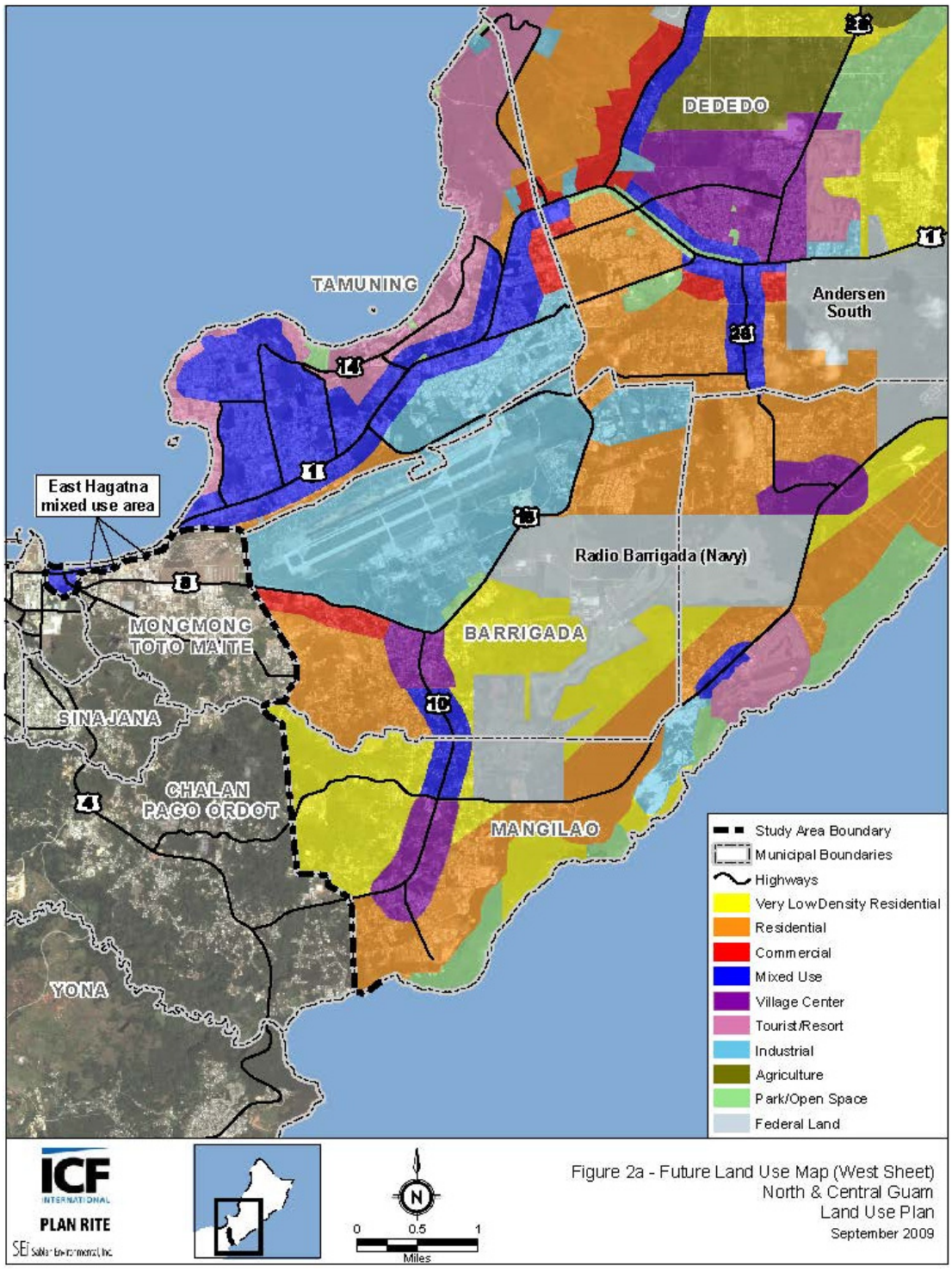
The Healthcare Task Force conducted several follow-up meetings to further consider these three potential sites. The establishment of three subcommittees that would further analyze DLM's recommendations was outlined. The committees were assigned to Health Services, Land and Facilities, and Finance and Procurement. Continued consideration of the three sites by the Healthcare Task Force occurred throughout the development of the MCMP. The sites were then compared with the existing land allotment for central Guam (Figure 2-2) to identify compatibility with the surrounding area.

Figure 2-1. Aerial Maps of Top Three Sites

Source: Matrix Design Group/Google Earth (2022)

These sites would all meet the key criterion of being centrally located. The next step in the site selection process was to evaluate future land use and see if these sites would be compatible with existing and future development. A map of future land use can be found in Figure 2-2.

Figure 2-2. Future Land Use Map - North and Central Guam



Source: North & Central Guam Land Use Plan (2009)

2.4. SWOT for Three Alternative Sites

The Department of Land Management conducted a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis of all site alternatives. Additionally, site selection criteria were developed to compare the sites with each other, using a scoring process that defines the most important criteria in siting the Medical Campus Master Plan. The top 16 criteria used are summarized in Table 2-2. The table explains the reasoning for each criteria. A score of one is the least favorable score, while a score of three is the best.

Table 2-2. Site Selection Scoring and Definitions

#	Criteria	Score of 1 - Definition	Score of 2 - Definition	Score of 3 - Definition
1	Adequate Site Size	Not Large Enough	Can Accommodate with No Expansion of Land	Room for Expansion
2	Development Constraints	Large	Medium	Small
3	Proximity to Aviation Facilities	Distance to Aviation Facility is Greater than 20 Minutes	Distance to Aviation Facility Greater than 10 Minutes	On-site Aviation Facility
4	Property Value Impact	Negative Property Value Impact	Neutral Property Value Impact	Positive Property Value Impact
5	Location/ Population Density	Farthest from Densely Populated Areas	Mid-range Distance from Densely Populated Areas	Closest to Densely Populated Areas
6	Travel Distance	Most Residents Farther than 20 Minutes	Most Residents Farther than 10 Minutes	Most Residents within 10 Minutes
7	Current Traffic Conditions	High Traffic Area	ModerateTraffic Area	Little to No Traffic
8	Emergency Response Times	Residents within 15-Minute Response Time - Low	Residents within 15-Minute Response Time - Average	Residents within 15-Minute Response Time - High
9	Proximity to Arterial Roads	More than 5 Minutes from Arterials	5 Minutes from Arterials	Immediate Access to Arterials
10	Distance from Clinics/Hospitals	Far from the Location of Clinics	Relatively Close to the Location of Clinics	Closest to Clinics
11	Future Expansion Capability	Little to No Space	No On-site Land for Expansion	On-site Land Area for Expansion
12	Utilities – Power	No Existing On-site Connectivity (funding required)	Existing On-site Connectivity (funding required)	Existing On-site Connection (no funding required)
13	Utilities – Water	No Existing On-site Connectivity (funding required)	Existing On-site Connectivity (funding required)	Existing On-site Connection (no funding required)
14	Utilities – Waste Water	No Existing On-site Connectivity (funding required)	Existing On-site Connectivity (funding required)	Existing On-site Connection (no funding required)
15	Construction Costs	Construction Costs Highest	Construction Costs Mid-range	Construction Costs Lowest
16	Land Use/Zoning Compatibility	Not Compatible with Land Use/Zoning	Somewhat Compatible with Land Use/Zoning	Compatible with Land Use/Zoning

Source: GovGuam Medical Task Force (2022)

These criteria were applied to all available sites and government properties that could accommodate a future medical campus.

Table 2-3 is the simplified version of the complete SWOT site analysis as it would have been applied to all sites, showing only the three sites that received the best scores. A score of 1 is the minimally acceptable satisfaction of the criteria, while a score of 3 is the most acceptable satisfaction of the criteria item.

Table 2-3. Alternative Site Comparison and Scores

#	Criteria		Ypao Point/ GMH Site	Adacao Parcel	Eagles Field
1	Adequate Site Size	1	3	3	
2	Development Constraints	1	1	2	
3	Proximity to Aviation Facilities	3	3	3	
4	Property Value Impact	2	3	3	
5	Location/Population Density	3	3	2	
6	Travel Distance	3	1	2	
7	Current Traffic Conditions	1	2	3	
8	Emergency Response Times	2	2	2	
9	Proximity to Arterial Roads	3	2	3	
10	Distance from Clinics/Hospitals	3	2	2	
11	Future Expansion Capability	1	3	3	
12	Utilities – Power	2	1	2	
13	Utilities – Water	2	1	2	
14	Utilities – Waste Water	2	1	2	
15	Construction Costs	2	1	2	
16	Land Use/Zoning Compatibility	3	1	2	
	Total Score	34	30	38	

Source: GovGuam Medical Task Force (2022)

As illustrated in the table, these three sites met or exceeded the baseline criteria, and many ranked high in satisfying the requirements. Since these three sites scored relatively similarly, an additional component was developed in more detail: drive time.

2.5. Drive Time Analysis

Drive time is a critical element in analyzing hospital and medical facility siting. The time it takes to reach the emergency or trauma facility can make a substantial difference in whether death or serious injury will result from a medical emergency. Optimally, the drive and medical transport times are 10 minutes or less. A 10- to 20-minute drive is less desirable, a 20- to 30-minute drive is considered acceptable, and a greater than 30-minute drive time makes it more difficult to achieve desirable medical outcomes. Table 2-4 summarizes the drive time analysis completed by Matrix for each of the three alternative sites.

Table 2-4. Drive Time Analysis – Three Alternative Sites

Location	0-10 Minute Estimated Population Served	10-20 Minute Estimated Population Served	20-30 Minute Estimated Population Served	Population Not Served within 30 Minutes
Eagles Field	16,959 10.6%	89,965 (+73,006) 56.6% (+45.9%)	136,267 (+46,302) 85.5% (+29.0%)	23,199 14.5%
Adacao	13,731 8.6%	92,930 (+79,199) 58.3% (+49.7%)	132.094 (+39,164) 82.9% (+24.6%)	27,358 17.1%
Ypao Point	35.686 24.4%	106,282 (+70,596) 66.7% (+42.3%)	13,875 (+27,593) 84.0% (+17.3%)	24,598 16.0%

Source: Matrix GIS (2022)

The drive time analysis shed further light on the suitability of each of the sites. The details and considerations for each site are outlined below.

2.6. Site Evaluations: Top Three Sites

Ypao Point in Tamuning, Adacao Crown lands in Mangilao, and Eagles Field in Mangilao all showed promise. The GovGuam Medical Task Force proceeded to investigate these sites, explore their access limitations, and evaluate the infrastructure that each would require for the development of a medical campus. An analysis of each site follows.

2.6.1. Ypao Point/Old Guam Memorial Hospital Site

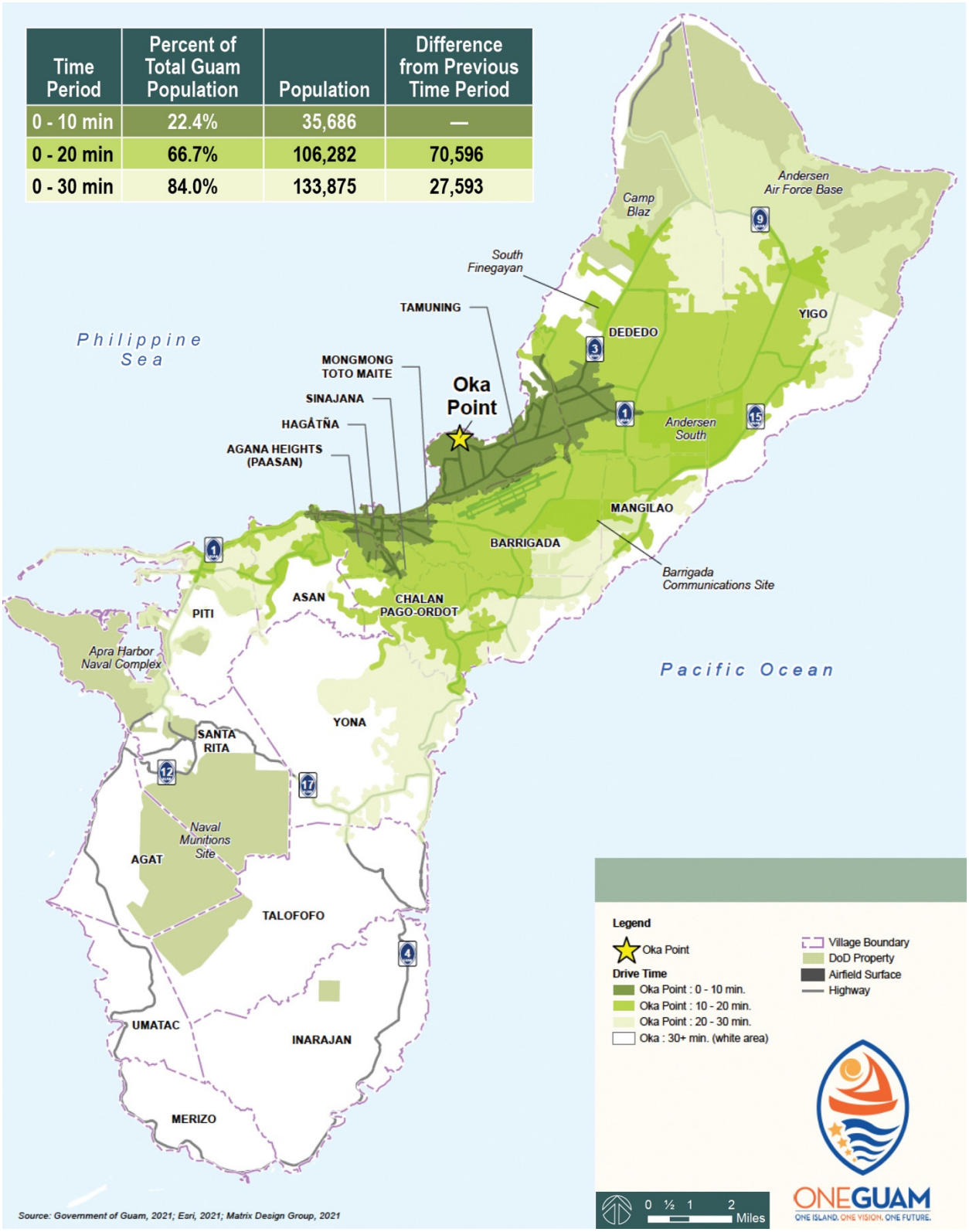
Ypao Point is the former location of an old Guam Memorial Hospital. At 35 acres in a central location not far from the existing hospital, it was evaluated as a site for rebuilding GMH.

The SWOT analysis of this site noted several strengths, such as proximity to aviation facilities, high population densities, and reasonable travel distances. Weaknesses include inadequate space to accommodate the replacement facility and ancillary services as required through the MAP investigations, costly development constraints, and already-congested traffic in the area that would inevitably grow worse and threaten emergency vehicle access. The team did continue to explore the potential for redevelopment and expansion at this location, along with building construction and infrastructure costs. However, it was determined that the redevelopment coordination of the Ypao Point site would be difficult and pose a significant disruption to the provision of medical services to the public.

The drive time analysis for the Ypao Point site illustrates the population drive times, which are shown in Figure 2-3.

Figure 2-3. Ypao Point Drive Time Analysis

Time Period	Percent of Total Guam Population	Population	Difference from Previous Time Period
0 - 10 min	22.4%	35,686	—
0 - 20 min	66.7%	106,282	70,596
0 - 30 min	84.0%	133,875	27,593



2.6.2. Adacao Land Parcel (Crown - GALC)

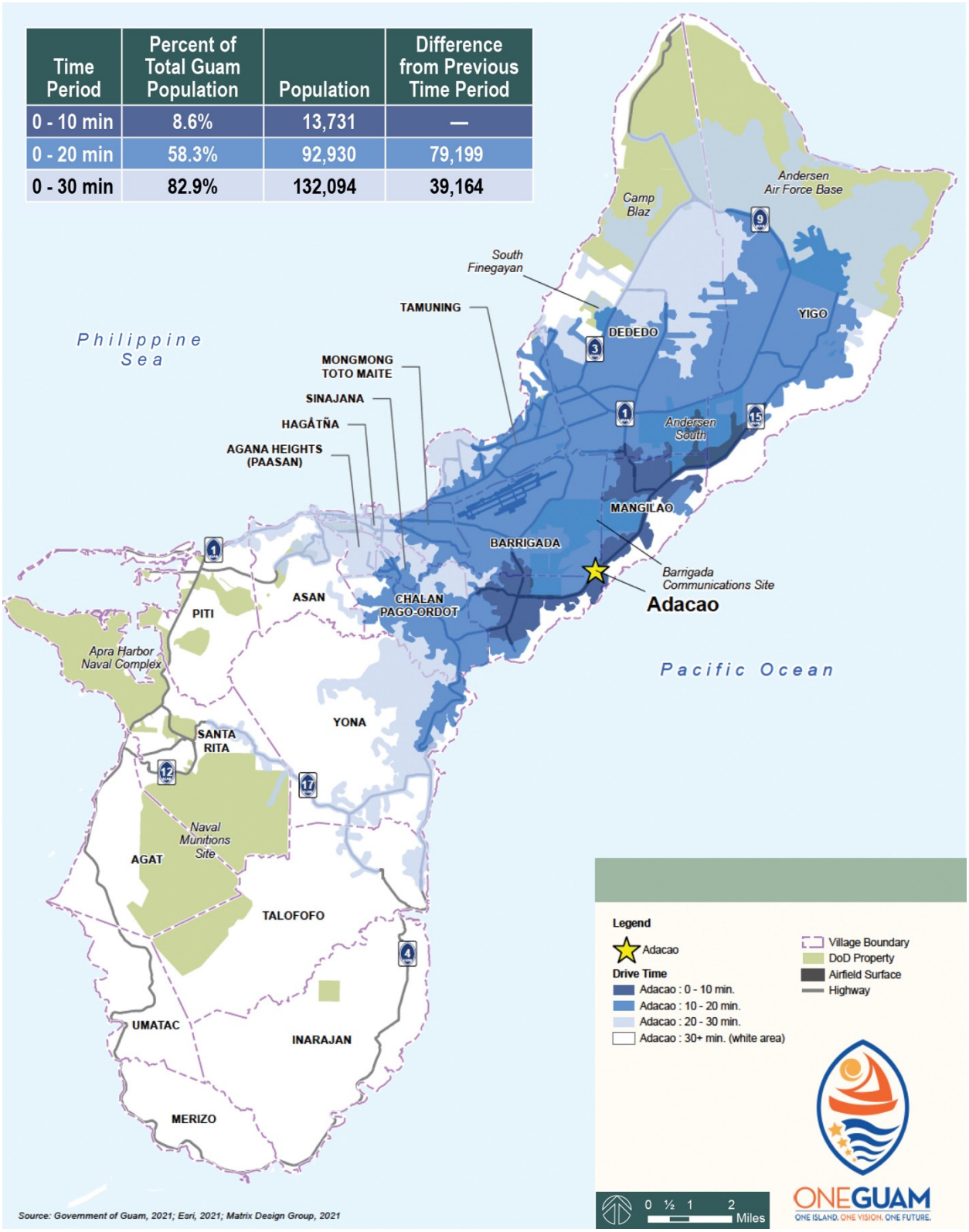
Adacao, located in Mangilao near the east coast of Gaum, is a large site encompassing 102 acres. The SWOT analysis (refer to Table 2-1 and Table 2-2) noted several strengths. The site's large size would allow the full MAP medical health care program to be developed. The site also has some proximity to aviation facilities, existing high population densities, and a potentially positive impact on surrounding property values.

Weaknesses included the site's proximity to radar facilities, costly development constraints, longer travel distances, and a sizable cost of extending and expanding utilities. Furthermore, the site was incompatible with existing land use and current zoning. Rezoning and preparing this site for a medical campus would result in significant disruption during development.

The drive time analysis for the Adacao site is shown in Figure 2-4. Ultimately, the drive times for the Adacao Land Parcel were worse than those for the Ypao point location, and most comparable to those of the alternative Eagles Field location.

Figure 2-4. Adacao Drive Time Analysis

Time Period	Percent of Total Guam Population	Population	Difference from Previous Time Period
0 - 10 min	8.6%	13,731	—
0 - 20 min	58.3%	92,930	79,199
0 - 30 min	82.9%	132,094	39,164



2.6.3. Eagles Field (U.S. Navy)

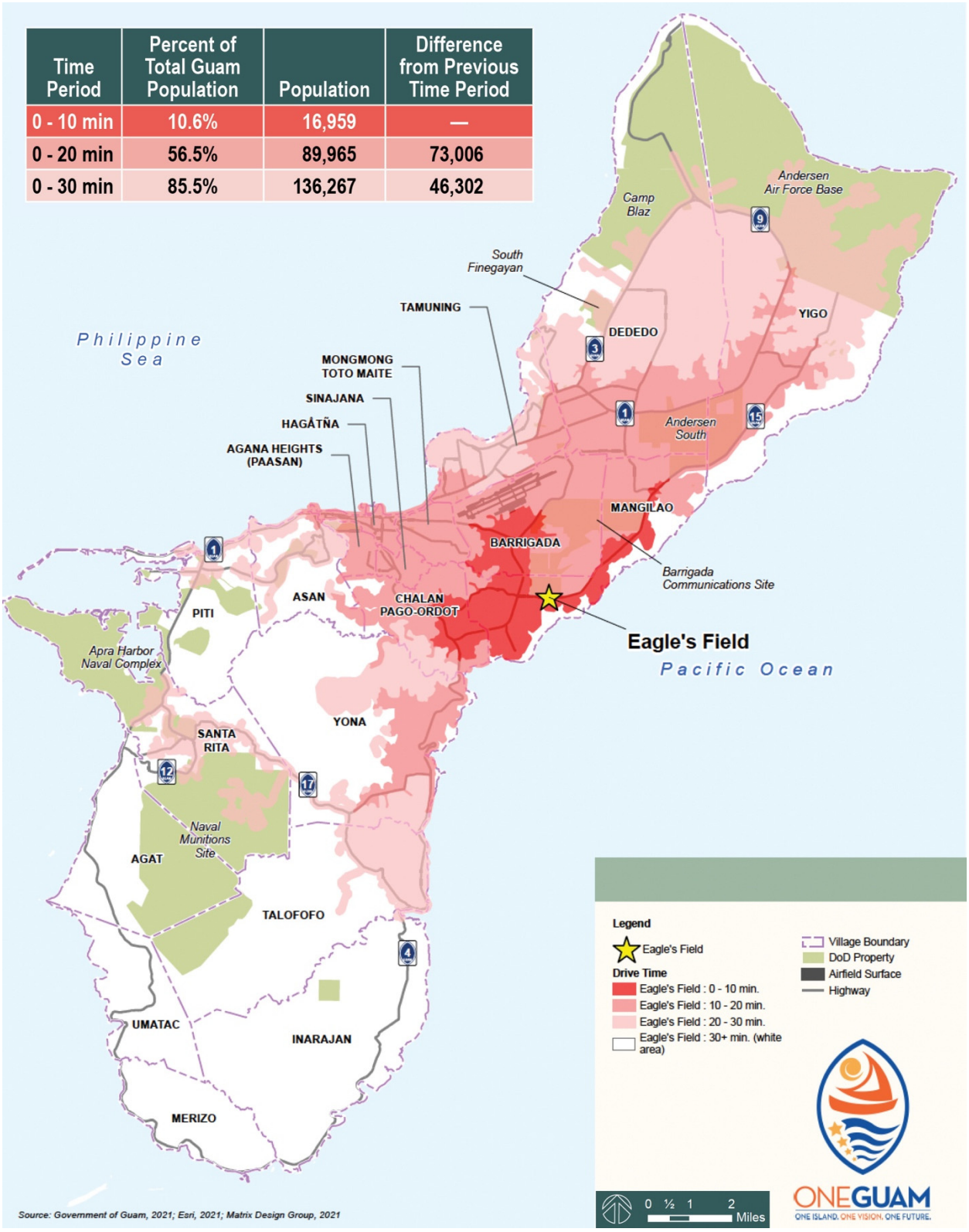
The Eagles Field site is a 102-acre site located in Mangilao, in the central region of Guam, near the GPA & GWA complex. The site is slightly farther south than Adacao and is owned by the U.S. Navy. Therefore, the required federal permitting process would apply, and if this site is selected for the medical campus, this process should be carefully considered when planning the development schedule.

Please refer to Tables 2-1 and 2-2 for the site selection criteria and the alternative site comparison and scores for the Eagles Field site. The SWOT analysis of this site noted several strengths, such as the generous area of 102 acres, which would allow the development of the full MAP medical health care program. Other strengths of the Eagles Field site are its proximity to aviation facilities, access to arterial roads, a potentially positive impact on surrounding property values, and the high population densities that could be served. Weaknesses include travel distances, the cost of extending and expanding utilities to the site, and moderate incompatibility with existing land use and zoning.

The drive time analysis for the Eagles Field site is shown in Figure 2-5.

Figure 2-5. Eagles Field Drive Time Analysis

Time Period	Percent of Total Guam Population	Population	Difference from Previous Time Period
0 - 10 min	10.6%	16,959	—
0 - 20 min	56.5%	89,965	73,006
0 - 30 min	85.5%	136,267	46,302



2.7. Preferred Site Plan Selection

Each site had unique strengths and weaknesses that made it a strong contender for a future medical campus. Ultimately, DLM, the Healthcare Task Force, GovGuam, and other agencies narrowed down the sites and weighed the challenges and opportunities of the three options. They concluded the following:

- *Ypao Point –* Acreage is not large enough for a medical campus. A larger area is desired to encourage future medical, medical-related commercial, and mixed-use economic development opportunities.
- *Adacao –* The 102-acre site is large enough to accommodate a medical campus, but proximity to a military training site is a concern, existing accessibility is poor, the site is not well situated for economic development, and Adacao (although possessing some infrastructure) will still need several infrastructure upgrades.
- *Eagles Field –* The 102-acre site is large enough to accommodate a medical campus and is centrally located. Additional permitting requirements apply on federal land, the NEXRAD radar facility is a minor concern, and infrastructure upgrades will be required. However, the location is accessible and large enough for a medical site.

All three sites are compared to one another in Table 2-5. A green box indicates that the criterion is met well, a yellow box that it is met moderately, and a red box indicates concern over meeting the criterion.

Table 2-5. Final Site Selection Comparison

	Selection Criteria	Adacao (Crown)	Eagles Field	Ypao Point
Land Ownership and Cost	Parcel Size: Required to support a Medical Campus	102 Acres	102 Acres	17 Acres
	Parcel Size: Required to support a new 161 bed hospital	102 Acres	102 Acres	17 Acres
	Current Jurisdiction	Guam Ancestorial Lands Commission (GALC)	Navy	CHamoru Land Trust Commission (CLTC)
	Land Conveyance Process	GALC Lease Need Board Approval to Lease	Navy Lease Either No Cost Public Benefit Lease (Needs Congressional Legislation) or Fair Market Value Lease	CLTC Amend Guam Public Law 25-29 to change law to give Governor authority for use of land. Currently it is CHamoru Land Trust lands.
	Timing: Land Available to Develop	Available Now	Dec 2022 - Earliest Date	Guam Public Law, act of local congress, Tony Lamorena bill reserves this CHamoru Land Trust land for commercial development only. Negotiations needed to finalize.
	Cost of Land	Crown Lands Up to GALC to determine lease cost	Could be No Cost or In Kind, Depending on Congressional legislation	No Cost
Site Constraints	Topography	Level, possible sinkholes	Fairly level	Fairly Level - Cliff side
	Development Compatibility Issues	None	NEXRAD Radar - Height Restriction due to radar viewshed	Utility easements (water and communications) potentially need to be relocated and Fault Line near edge of parcel boundary
	Current Use	None	DoD and Village Athletic Fields	Metallic waste staging area, green waste staging area, rhino beetles mating area, fire ants nests
Infrastructure/Transportation/Parking	Main Access	Route 15	Route 15	Route 14
	Secondary Access	None	None	Governor Camacho Street, San Vitores through hotels
	On-site Utilities	None	None	Some On-site, Undetermined
	Water Infrastructure Costs	Similar to Eagles Field	$26M	$5M For upgrade or short installment
	Wastewater Infrastructure Costs	Similar to Eagles Field	$26.5M	$5M For upgrade or short installment
	Power Infrastructure Costs	Similar to Eagles Field	$20M	$5M For upgrade or short installment
	Roads and Transportation	Similar to Eagles Field	$20M+	$5M For upgrade or short installment
	Parking Capacity	Unrestricted	Unrestricted	Limited
	Telecommunications	Similar to Eagles Field	$10M+	$5M For upgrade or short installment
Other Considerations	Drive Time Population Served 0 - 30 Min	132,094 82% of Guam population	136,267 85.5% of Guam population	133,875 84% of Guam population
	Adjacent Uses and/Planned uses	South of training area	Residential	Residential
	Sentiment of the Doctors and Medical Community	Negative	Negative	Positive
	Community Perception for Location of New Hospital	Neutral	Neutral	Supportive
	Disruption to Neighborhoods During Construction	Limited	Limited	Significant
	Ease of Construction	Normal	Normal	Challenging
CDC Lab	CDC LAB location	Can be located at Adacao but no infrastructure available, can start construction for infrastructure immediately	Can be located at Eagles Field, but no infrastructure available, Navy can give a license for construction to start infrastructure ASAP	No room to site CDC Lab on site

Source: Matrix Design Group 2022

In May 2022, the Governor of Guam selected the Eagles Field site as the preferred location for the new Medical Health Care Campus. The primary reasons for this decision include the following:

- Adequate size
- Limited disruption to neighborhoods during construction
- Opportunities for utility infrastructure development

With the need for a new medical campus identified, the next step is to examine the site in detail for any potential obstacles to development.

CHAPTER 3

Site Details

3. Site Details

3.1. Introduction

Multiple locations had been considered against a curated set of criteria, but GovGuam determined Eagles Field best fit within the analyzed constraints. Eagles Field is located within the Village of Mangilao and is under the ownership of the Department of the Navy. The site is central to the island, and accessible, with options for gradual expansion, room for a helicopter pad for emergency air transportation, and affordable utility improvement options.

In this chapter, the site at Eagles Field is explored in more detail, from the precise lot information to the existing easements within the property. Key considerations for the site are outlined, including a high-level summary of the Department of Defense's Environmental Conditions Report (ECR) for Eagles Field and critical hazards identified, as well as preliminary infrastructure assessments to bring utilities into the site.

3.1.1. Site Overview

Eagles Field is a 102-acre site situated in Mangilao, in Central Guam. The Department of the Navy owns the property. The site is conveniently located within the vicinity of Guam Power Authority (GPA) and Guam Water Authority (GWA) and is large enough, based on the criteria, to develop the envisioned medical health care campus, with ample room for parking and access roads. The land surrounding the site is currently planned for residential or mixed-use, according to the North and Central Guam Land Use Plan. The proposed siting of the new hospital at Eagles Field can be designed to be compatible with neighboring existing land uses, increase their property values, and incentivize additional economic opportunities to develop in the area.

The site topography is primarily flat, sloping downward toward the southwest corner of the property. The site is undeveloped but does include two sports fields. These two sports fields will ultimately be relocated to the southeast area of Eagles Field and are planned to be improved. Currently, there are no known significant environmental hazards or constraints to development at this location.

3.1.2. Site Village Description

Guam Route 15 (GU-15) is the primary east/west corridor that provides the primary access to the site, while GU -10 is the primary north/southwest corridor that provides access to GU-15. The Village of Mangilao is located in east-central Guam, and the entire southeast border of the Village is a coastline adjacent to the Pacific Ocean. Mangilao is considered an "education district" and is home to the University of Guam and Guam Community College. The Village of Mangilao includes Asbeco, a populated area centrally located in the village, and Adacao, a settlement in eastern Mangilao. Other populated areas in Mangilao are located south of GU-15 along both sides of GU-10 in the western portion of the village.

3.1.3. Lot and Tract Identification, Description, and Ownership

The site identified at Eagles Field includes five different lots and tracts. In total, the planning area includes three public and utility rights-of-way. Currently, only Lot 3 has any permanent access off GU-15. The Department of the Navy owns all parcels.

Lot 1, Tract 18308, is 47.99 acres and is located in the western portion of the site. It contains an athletic field in the southeast portion of the lot. The rest of the lot is vacant. Lot 2, Tract 18308, is 54.00 acres located in the eastern portion of the site. Lot 2 is entirely covered in vegetation and is vacant. Lot 3, Tract 18308, provides access to the NEXRAD radar north of the site. Lot 3 is 4.88 acres. provides public access and utility right-of-way. Lot 4, Tract 18308, is in the easternmost part of the site and includes public access and utility right-of-way. Lot 5, Tract 18308, is in the northwest portion of the site and includes wide public access and utility right-of-way. Lot 5 is 2.09 acres. The list of lots and their details can be found in Table 3-1 and are shown relative to the site in Figure 3-1.

Table 3-1. Eagles Field Lots & Tracts

Lot Number	Tract	Acres (square meters)	Description
1	18308	47.99 (194,240)	Western portion of the campus plan
2	18308	54.00 (218,531)	Easter portion of the campus plan
3	18308	4.88 (19,769)	Wide public access and utilities right of way servicing the NEXRAD site
4	18308	3.90 (15,783)	Wide public access and utilities right of way in the eastern portion of the plan
5	18308	2.09 (8,465)	Wide public access and utilities right of way in the northwest portion of the plan

Source: DoDLICENSE N40192-21-RP-00026 (Medical Complex)

Figure 3-1. Eagles Field Lot & Tract Identification Map

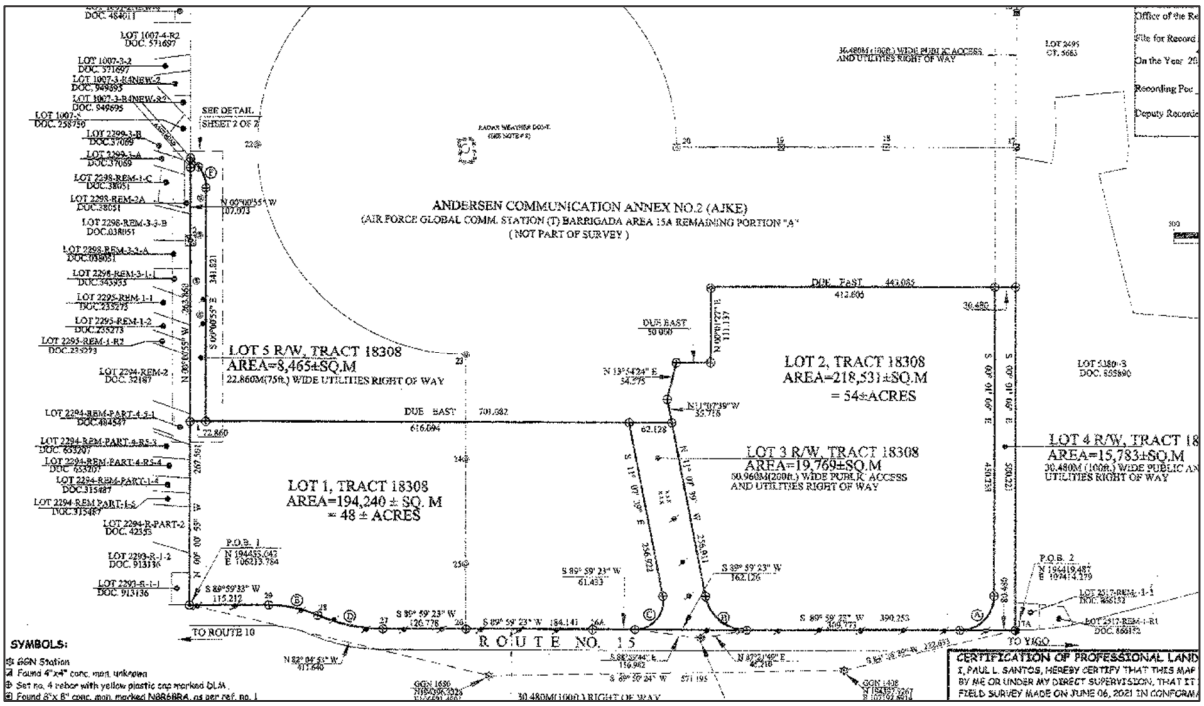
Source: Guam Department of Land Management 2021

The tracts are federal property which means the development of a medical facility will require the developer/owner to obtain a Federal Consistency Determination. This is required under 15 CFR Part 930 Subpart C and/or Subpart D. A National Pollutant Discharge Elimination System (NPDES) permit will also be required. The Clean Water Act will require an NPDES permit under the General Construction Permit (GCP) provisions since more than one acre will be disturbed. Guam EPA administers the GCP. In addition, under the National Historic Preservation Act, Section 106, federal agencies must consult on the Section 106 process. The Guam Department of Parks and Recreation (DPR) State Historic Preservation Office (SHPO) administers this compliance. This lengthy federal permitting process should be carefully considered when planning the development schedule.

3.1.4. Boundaries and Dimensions

The entire site covers 112.86 acres, including all current easements. The total easement area is 10.87 acres. Route 15 bounds the southern portion of the site. The northern boundary lies within federal land owned by the Department of the Navy. The site is bounded by private property and residential uses to the west and industrial and agricultural uses to the east. A survey map excerpt can be found in
Figure 3-2 illustrates the boundaries of the Eagles Field Tract.

Figure 3-2. Excerpt from Lot Parceling Survey Map of Tract 18308

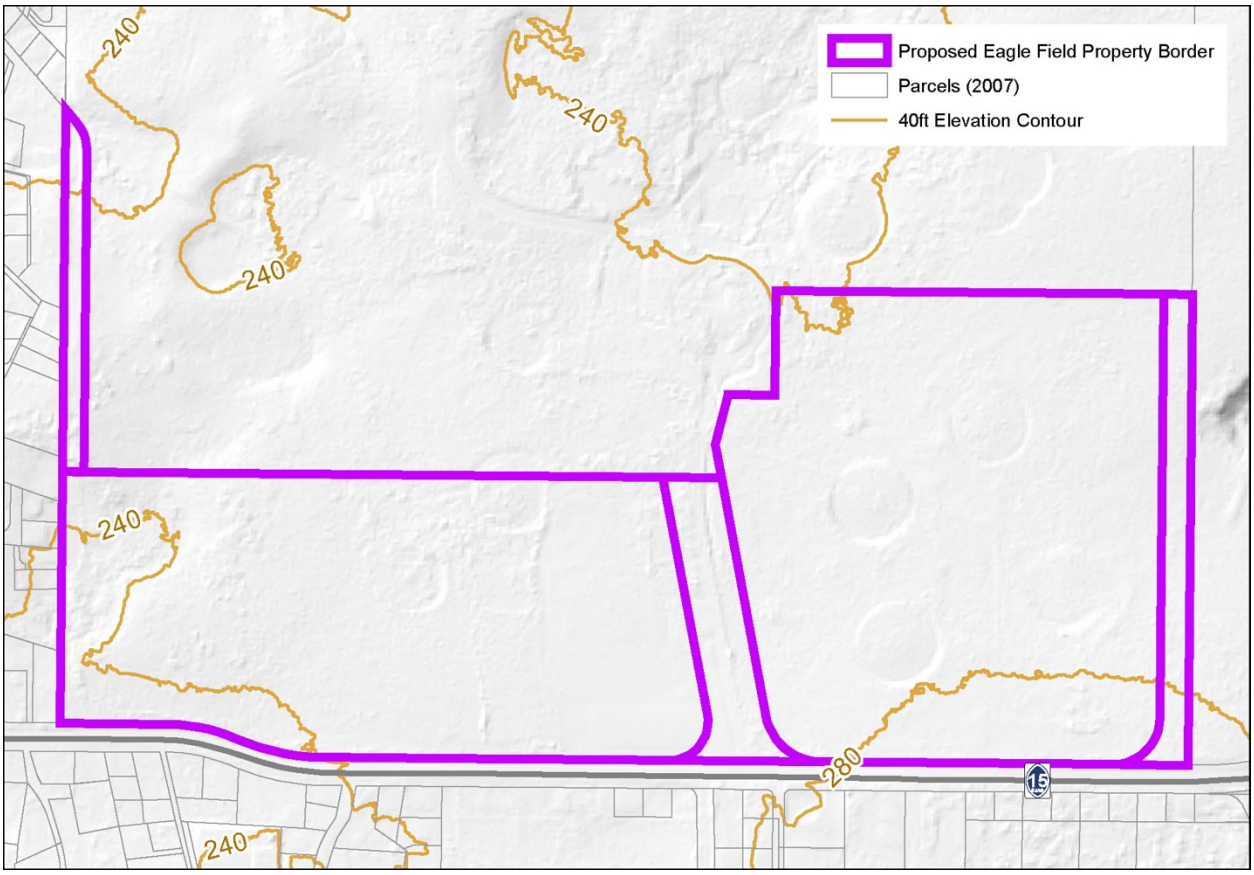


Source: DoD License for Nonfederal Use of Department of The Navy Real Property, 2021

3.1.5. Topography

The property is generally flat but has some slope to the southwest. Because of the general slope, drainage locations have been planned in the western portion of the campus master plan. Site drainage flows toward the western part of the property, and, if necessary, stormwater can be contained on-site to avoid overburdening the stormwater sewers. Because most of the property is relatively flat, most views are unobstructed from Route 15. The flat area allows the facilities to be viewed from the road without impediment and enhances the visual appeal of the campus. The topography of the site is illustrated in Figure 3-3.

Figure 3-3. Topography of Eagles Field

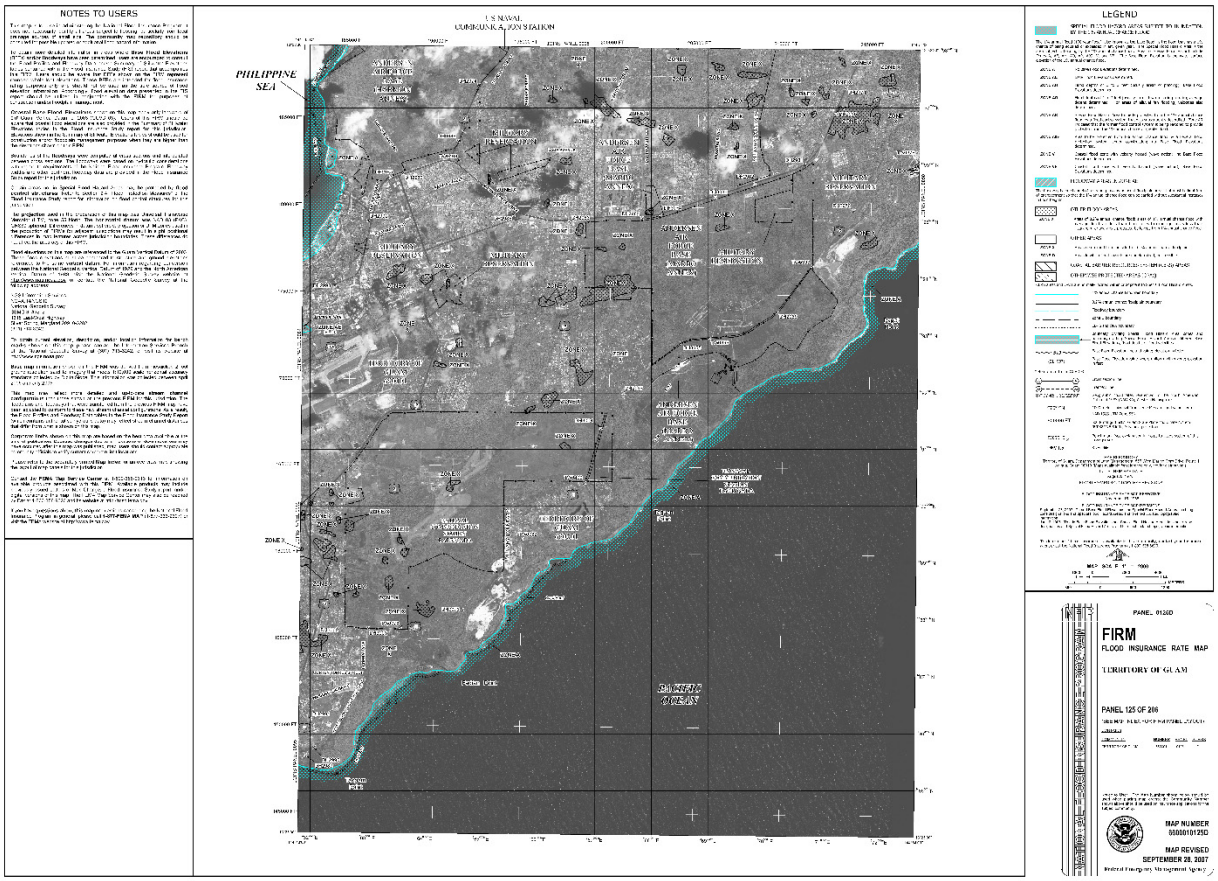


Source: Government of Guam, 2021; ESRI, 2021

3.1.6. Flood Zone Investigation of the Site

All five parcels are located within the FEMA flood map 6600010125D, effective September 28, 2007, displayed in Figure 3-4. As illustrated on the map, all five parcels have been determined to be located outside the 0.2% annual chance floodplain.

Figure 3-4. 2007 FEMA Flood Map



Source: FEMA, 2007, accessed December 17, 2021, Located online here: https://msc.fema.gov/portal/search?AddressQuery=Guam#searchresultsanchor

3.1.7. Wetlands

Designated Wetlands on and around the Eagles Field site can be found in Figure 3-5. There are no wetlands within the project area (outlined in red); however, the northern ends of the proposed medical campus site would fall within the 1,000-foot buffer zone for protected wetlands. Protected wetlands and their buffers must be considered in the campus planning process.

Figure 3-5. Designated Wetlands On and Around Eagles Field

Source: Esri, 2021; Matrix Design Group, 2021

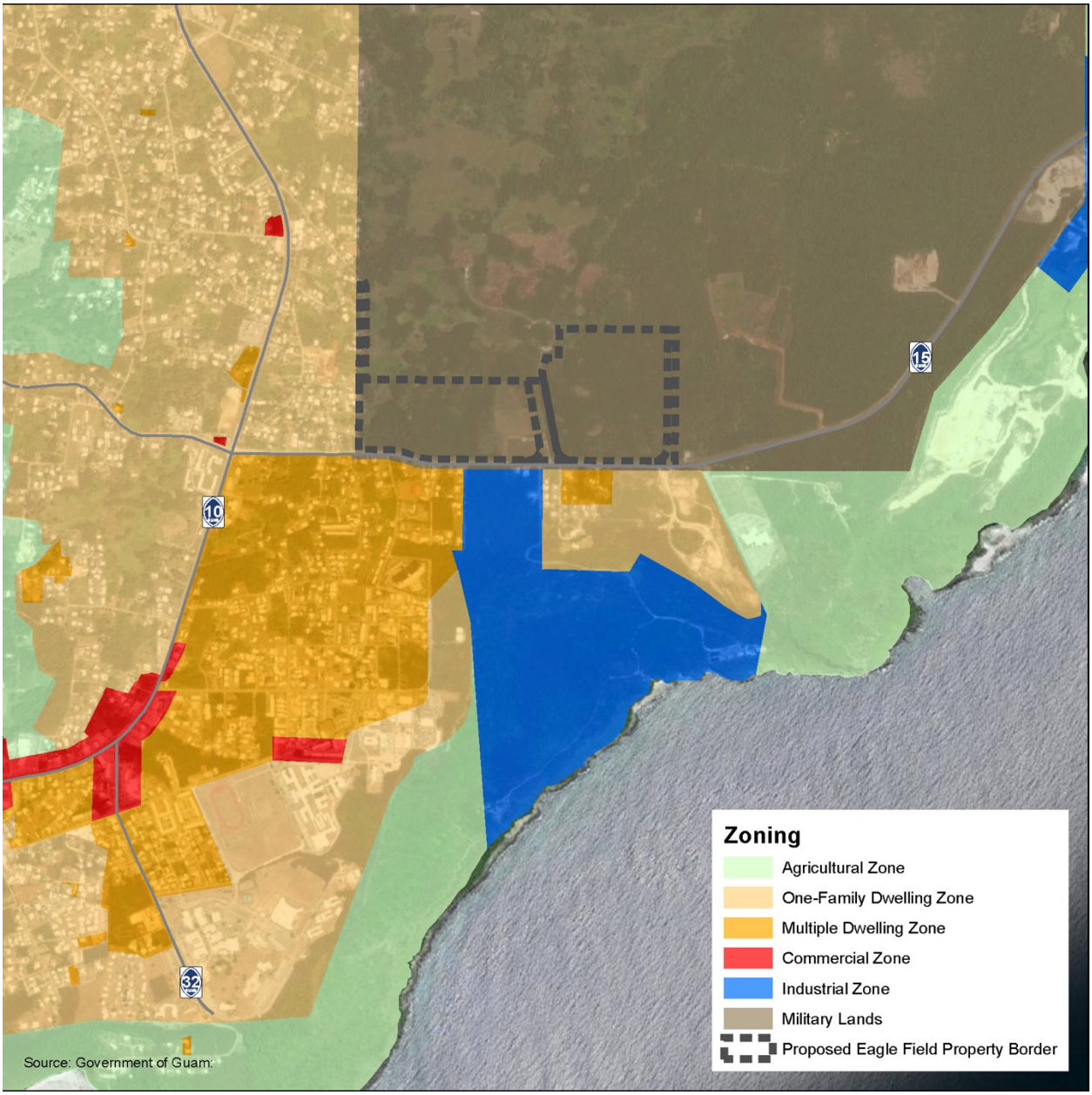
3.1.8. Zoning and Land Use Parameters in the Area

The land uses for the proposed medical campus site at Eagles Field are military and federal. Therefore, rezoning will need to occur to transform the site into a medical campus. The project will require a conditional use permit for the hospital construction. Additionally, new land use plans for the area should be updated to reflect the land uses not considered in the previous North and Central Guam Land Use Plan. The new land use should be updated from Federal Land to Mixed Use according to definitions from the North and Central Guam Land Use Plan.

3.1.8.1. Zoning Parameters

The Eagles Field site is currently zoned as Military Lands, according to GovGuam zoning data from 2018. Zoning in the area is displayed in Figure 3-6. Rezoning the area to a Commercial Zone or Mixed Use would provide flexibility for various permitted and conditional uses and meet the intended uses of the site better.

Figure 3-6. Current Zoning in Vicinity of Eagles Field



Source: Government of Guam 2021

3.1.8.2. Land Use Parameters for Eagles Field

As of this report, the future land use designation for Eagles Field property is Federal Land for the type of land use. The Guam Bureau of Statistics and Plans' North and Central Guam Land Use Plan from September 2009 defines Federal Land as:

- ***Federal Land.*** *The Federal Land category includes all properties owned and managed by the federal government for military and other uses.*

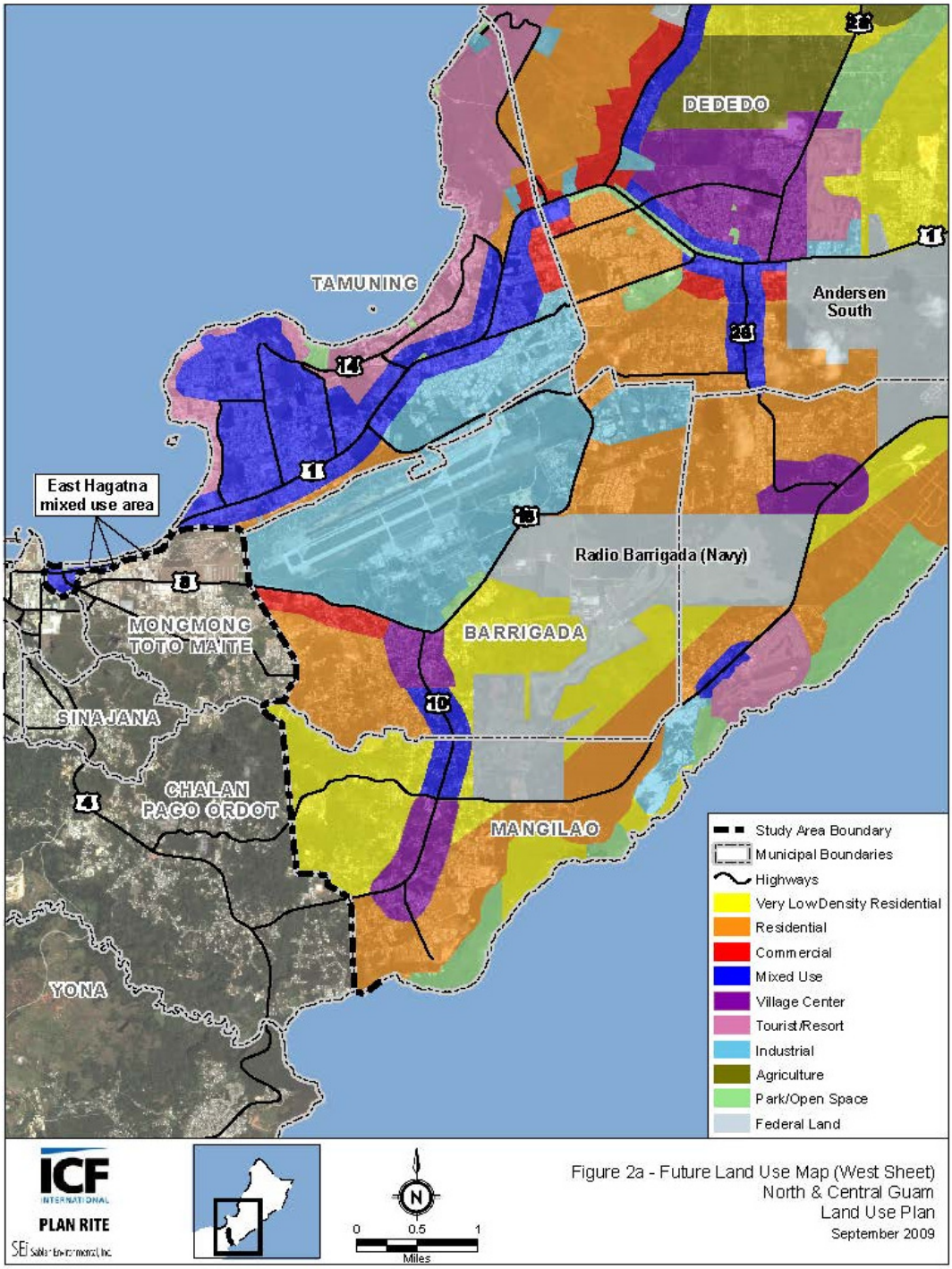
Because the intensity of use will change the area around Eagles Field and attract more traffic and commercial activity, future development will be encouraged. Land use designations should be revised near Eagles Field to take advantage of utility extensions and to develop a new service cluster in Mangilao.

Very Low-Density Residential and General Residential zoning surround the planning area. Very Low-Density Residential borders from the southwestern and western portions of the planning area and General Residential borders from the southeast and eastern portion of the planning area. Very Low-Density Residential and General Residential are defined by the Bureau of Statistics and Plans in the North and Central Guam Land Use Plan from September 2009. The uses are defined as:

- ***Very Low-Density Residential.*** *This residential designation provides for very low-density (VLD) residential development in the area over the sole source Northern Aquifer. The purpose of this designation is to provide for residential growth while protecting the long-term viability and health of the Northern Aquifer. VLD Residential densities should generally be no more than one unit per acre. In addition, nonresidential development, such as continued agricultural uses, should be subject to specific criteria and standards to ensure the protection of the Northern Aquifer.*
- ***General Residential.*** *The Residential category provides for a range of residential densities, ranging from low-density single-family residences to multiple-family structures. Nonresidential uses are generally discouraged except for public facilities, schools, and institutions, provided their nature and location are not detrimental to the residential environment. A special design review process should be established to ensure compatibility with surrounding residential neighborhoods where neighborhood-scaled commercial and retail are desired in a residential zone.*

Proposed land uses near the medical campus could support a better transition from low-intensity uses to higher-intensity uses at the hospital campus site. The existing GovGuam Future Land Us Plan for Eagles Field is found in Figure 3-7.

Figure 3-7. Current Land Use in Vicinity of Eagles Field



Source: North and Central Guam Land Use Plan, Bureau of Statistics and Plans—Government of Guam • September 2009

3.1.9. Current Land Use

The current land use of the property is mainly vacant, with the exception of a road that accesses the NEXRAD weather radar facility outside of Eagles Field and two recreational/athletic fields that are used by the Village.

3.1.9.1. NEXRAD Facility

Eagles Field property includes a U.S. Navy access road to the NEXRAD facility. Since this is the only access road to the radar site, a dedicated public access easement is necessary to be part of the future Medical Campus Master Plan. Currently, access to the radar facility is via a 200-foot-wide public access and utility right-of-way that transects the entire planning area. In the process of building new access roads and realigning the main entrance to the campus across from Perez Park) the public access easement will have to be re-negotiated before the development of the property. It is also possible that the NEXRAD Radar could be relocated to the top of the new hospital building, which would ensure access for Naval maintenance and ease construction constraints

Figure 3-8. NEXRAD Facility, easement, and roadway providing access as viewed from Eagles Field Athletic Fields

3.1.9.2. Athletic Fields

The southeastern portion of Lot 1 and the middle portion of Lot 3 are used as general-purpose athletic fields by the local community. The fields have recently been renovated for youth football leagues. The area surrounding the fields is used for informal parking and audience seating, and private skydiving companies have been using the fields as a landing site. As part of this plan, the fields are proposed to be relocated to the southern portion of the site to continue their community function.

Figure 3-9. Eagles Field Athletic Grounds, Looking North

3.1.10. Adjacent Property/Structures

Government land and Navy operations are located on the north and east boundaries of the property. Residential uses are located south and west of the Eagles Field site. The Navy NEXRAD radar facility is located immediately north of the property and has the most impact on the development of this site. Route 15 is located on the south boundary of the site and is the primary vehicular access route.

An Environmental Conditions Report conducted in March of 2022 confirmed no known historical structures are located on or near the property.

3.1.11. Easements

Three easements within the campus plan area as critical utility rights-of-way. The most important is the 200-foot-wide easement that provides utility and personnel access from the NEXRAD facility to GU-15.9 (image in Figure 3-5, above).

On the site's eastern boundary is a 100-foot utility easement, designated as a utility right-of-way. The last and smallest easement, a 75-foot utility right-of-way, is in the northwest portion of the property.

3.1.12. Detailed Eagles Field Planning Evaluation

Because this site appeared promising based on its location, size, ownership, flood zones, easements, topography, and other factors, it was crucial to assess other sites' existing conditions, history, jurisdictional requirements, and socioeconomic status impact. These details would ensure there are no unknown constraints to the development of this property. Our investigation revealed the following primary development considerations:

- Analysis of the existing off-site infrastructure and its ability to serve a medical healthcare campus by GWA and GPA
- Preparation of a preliminary estimate of the cost to improve off-site infrastructure by GWA and GPA
- Research on any existing on-site infrastructure
- Analysis of aviation restrictions that impact the property
- Confirmation of ability to locate a helipad on the medical campus property
- Research on NEXRAD constraints to development that would affect the campus master plan
- Evaluation of the setback requirements and building height restrictions due to the adjacent NEXRAD facility and overflight zones
- Analysis of transportation access points needed to serve the property
- Estimation of the number of trips that this development would generate by the Guam Department of Public Works (DPW)
- Identification of any environmental concerns that may impact development costs by DoD
- Research on site topography and natural drainage patterns on and surrounding the site
- Review of USGS documents to confirm that the site is not within any documented flooding areas
- Consideration of the potential social impact of the village's existing recreational fields and options to relocate within the site plan
- Further research on the federal permitting process and estimation of the length of time required
- Research on the license/lease requirements and analysis of the time required

The main development concern identified regards the relocation of the NEXRAD radar facility. If the Navy agrees that the NEXRAD radar can be relocated to the hospital, the hospital can be built higher, possibly up to four stories.

3.2. Environmental Conditions Report

An *Environmental Condition of Property (ECP)* report was prepared for the Eagles Field site following the Department of Navy Environmental Policy. The report included a visual site inspection conducted on October 18 and 19, 2021. High-density vegetation growth and limited access prevented a more thorough review, but inspectors were able to obtain enough information for a preliminary report. In addition to the site inspection, readily available documentation and interviews with associated land users and owners were also conducted. Unfortunately, some inquiries for documents or additional information were not provided. Much of the site information from this chapter was obtained from the results of the ECP.

3.3. Potential Hazards

The ECP classified two categories of environmental hazards on the property, category 1 - no release of hazardous substances has occurred, and category 7 -unevaluated or requires additional attention. Category seven classifications were identified in areas where communications antennae have been located on the property in the past.

Five Areas of Concern were obtained from historical document review, interviews, and the visual site inspection.

1. The potential presence of solvents, metals, and pesticides/herbicides in the soil surrounding former antennae sites, remaining antenna structures (concrete slabs), and groundwater beneath the site.
2. The area has been identified as having 'high radon potential,' meaning the potential presence of elevated radon levels may occur should structures be constructed on the site.
3. Transite, an asbestos-containing material, may be found in underground cable conduits on the site.
4. Munitions and Explosives of Concern is listed as having 'moderate probability' in the area due to the site's history as a training site for various Department of Defense activities.
5. Lead-based paint may be found in utility structures and surrounding soils

These areas of concern would need to be evaluated and addressed further during site buildup.

3.4. Preliminary Infrastructure Assessment

A preliminary assessment of the on-site infrastructure was conducted as part of this plan. The focus was on identifying aspects that would need to be modified to develop the campus on Eagles Field. Utility analyses were requested as well as documentation of existing uses, boundaries, easements, wetlands, topography, adjacent property/structures, historic structures, and of course, the confirmation of the drive time analysis completed earlier - paired with options for increasing vehicle access. Details can be found below.

3.4.1. Utilities

Throughout the development of this Campus Master Plan, GovGuam utility agencies provided information on the types and characteristics of upgrades that would be needed to support a medical campus at Eagles Field. The Department of Public Works (DPW) and GovGuam utility agencies will need to plan around some utility and infrastructure upgrades for the campus being developed before any building can begin on the site.

Water, wastewater, electricity, and transportation infrastructure upgrades must occur before the campus's development. Additionally, all infrastructure upgrades would require funding from the campus plan developer.

DPW, Guam Water Authority (GWA), and Guam Power Authority (GPA) have provided the following preliminary requirements for the initial phases of development for the campus:

Table 3-2. Utility Requirements for Eagles Field

Department of Public Works (DPW)	Guam Power Authority (GPA)	Guam Water Authority (GWA)
GU-15 widening to six (6) lanes of travel, and related improvements Traffic Signals at three (3) arterial road intersections The estimated cost is $26 million The timeline to complete improvements is estimated at 2-3 years	Proposes a power substation on the campus to provide sufficient power to the entire campus Requires 1 acre for substation and supporting infrastructure Approximate cost is $20 million-plus Improvement timeline 1 year for design, 2 years for construction	Hospital and medical campus will require a water storage tank to create sufficient pressure for domestic and fire flow Water pump and well require ½ acre Potential for new GWA well to be drilled off campus Wastewater will need significant upgrades

Source: GovGuam DPW, GPA, GWA 2021

The initial stages of this infrastructure buildup are in the preliminary design phase, and improvements are not expected to begin until 2023. The final lease of the land from the Department of the Navy to GovGuam is anticipated to occur in December 2022.

3.4.2. Department of Public Works Road Access Development

Eagles Field was selected partly because of its central location and manageable drive time compared to other contending sites. However, there will still need to be some access road improvements. The primary route, Route 15 down to Route 10, will need to be expanded.

A summary of the DPW Route 15 roadway improvement requirements for the medical campus, along with a preliminary cost estimate for the improvements, is found in Table 3-3.

Table 3-3. Route 15 Widening from Route 10 to GPA/GWA

Item	Unit	Quantity	Unit Cost	Pay Item Cost
Hot Mix Asphalt (HMA) Concrete Pavement, Friction Course, 1" Depth, with Fiber Reinforcement	TON	2,550	$650.00	$1,657,500.00
Hot Mix Asphalt (HMA) Concrete Pavement, Basecourse, 3-Inch Depth	TON	7,650	$650.00	$4,972,500.00
Aggregate Base, Grading C, 8-inch Depth	SY	425,000	$25.00	$10,625,000.00
Traffic Signal System	LS	2	$1,000,000.00	$2,000,000.00
Total				$19,255,000.00
Design Contingency				30%
				$25,031,500.00

Source: GovGuam DPW 2021

Further details on the required improvements to Route 15 and their all-inclusive estimated costs are pending from DPW at the time of this report.

3.4.3. Guam Power Authority Infrastructure Estimates

Guam Power Authority (GPA) provides power and power infrastructure to Guam via oil-fired power generators (94.3%) and renewable power generation (5.7%). As of 2014, GPA has over 49,000 customers.

Currently, electricity is distributed to the grid around Eagles Field. The new development would require additional electrical infrastructure, however. GPA provided a preliminary evaluation of the property and initial cost estimates for ensuring electric service to the entire medical campus. A standby generator for each building with a recommended fuel capacity of two weeks should be designed for the new medical complex.

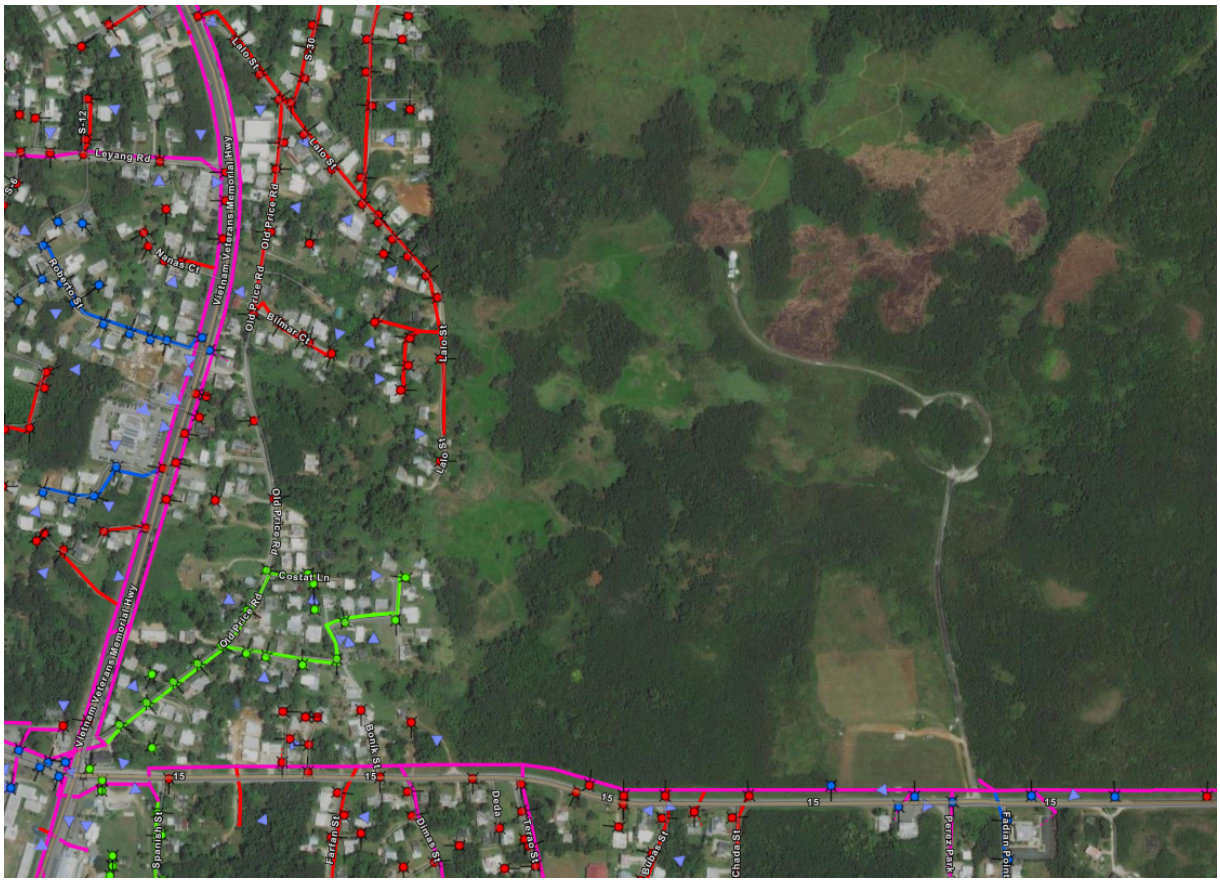
Based on the GPA infrastructure upgrades, the medical campus will require the following electrical infrastructure on the campus:

- Power substation (approximately one-acre)
- Power tie-ins from Route 15

GPA estimates three years from design through construction to complete these upgrades: one year for design and two years for construction. GPA provided the following preliminary cost estimates:

- One new electrical substation on a one-acre lot –$8.5 million
- Transmission lines that intercept Barrigada-Pulantat – $6 million for aboveground transmission lines, which excludes the cost of any underground transmission lines that may be required
- One dedicated feeder serving the new hospital, with another circuit utilized for back feed capabilities –is $1 million

Figure 3-10. Eagles Field Electrical Distribution



Source: GPA 2021

3.4.4. Guam Water Authority Infrastructure Estimates

Eagles Field's existing water and wastewater utilities are summarized as follows:

- Two water mains are located on Route 15 (identified in blue in Figure 3-11)
- One four-inch diameter force main on Route 15 (identified in pink in Figure 3-11). No connections are allowed directly to the force main.

3.4.4.1. Water

GWA is completing a water demand analysis for the Campus Master Plan but has already provided a preliminary evaluation of the site and water requirements. Based on the initial review, the medical campus will require the following water infrastructure on the campus:

- On-site water storage tank (size to be determined)
- Water pump and well (minimum of a one-half acre)

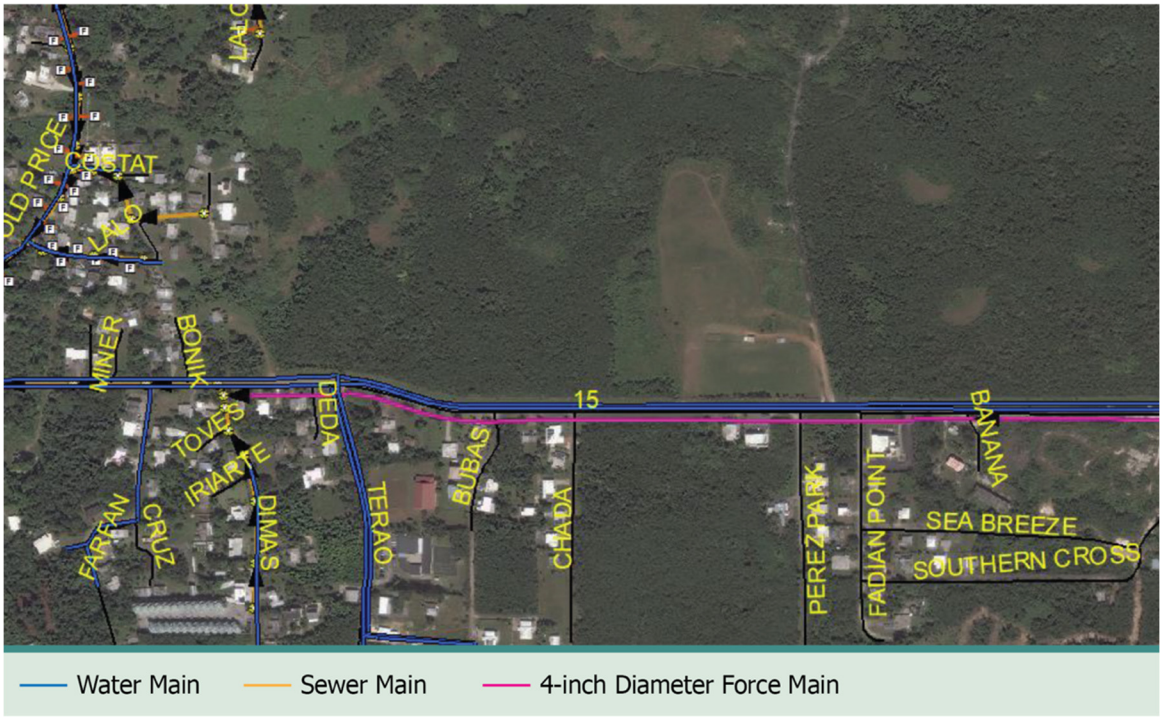
Two mains run next to GU-15, but the pressure provided from those mains does not meet the requirements for the estimated water pressure of the medical campus. Therefore, a storage tank is needed on-site. GWA is in the process of discussing a possible well on a nearby golf course owned by the Navy through the One Guam Task Force. The nearby well would eliminate the need for a well on-site. Regardless of the final location of the well, GWA estimated a cost of $2 million and noted that finding drillers to drill the well has been challenging.

GWA stated that any new construction or water infrastructure upgrades would need to be programmed into the Medical Healthcare Campus Master Plan funding strategy.

The nearest gravity sewer is at the intersection of Dimas Street and Route 15. Therefore, a new sewer system would need to be constructed from Eagles Field to this location.

Based on a cursory review of Route 15 elevations, a gravity sewer system could be constructed along Route 15. Elevations of the lot for the new hospital would need to be identified to determine if a sewer lift station is required to convey wastewater from the hospital to Route 15.

Figure 3-11. Aerial Map of Eagles Field - Existing Water/Wastewater



Source: Guam Waterworks Authority 2021

3.4.4.2. Wastewater

There is currently a sewer connection point on Lalo Street. This connection point utilizes a military easement.

The nearest gravity sewer is at the intersection of Dimas Street and Route 15. A new sewer system will need to be constructed from Eagles Field to this location. Based on a cursory review of Route 15 elevations, a gravity sewer system could be constructed along Route 15. Elevations of the lot for the new hospital will need to be identified to determine whether a sewer lift station is required to convey wastewater from the hospital to Route 15.

According to a meeting with GovGuam on November 18, 021, GWA is currently updating its sewer model to incorporate an updated load for its sewer system with the medical campus included. This upgrade would be modeled on the current eight-inch sewer line near Eagles Field. Any wastewater infrastructure upgrades, or construction completed at Eagles Field, would help the central Guam wastewater system.

3.4.5. Eagles Field Site Suitability

As outlined in this chapter, the Eagles Field site is a feasible option for the future medical campus. It is large enough to accommodate all the intended uses. However, it is owned by the Navy and will require federal permitting and a lease to develop, which must be considered in the phasing process.

The site analysis indicated that wetlands need to be addressed, but topography will not significantly impact development. There are no conflicts with adjacent property, structures, or historic structures on the site. Utility assessments indicate that a few critical infrastructure improvements are needed. Existing easements and uses are compatible with the intended use of the site.

GovGuam selected Eagles Field as the preferred site. The remaining chapters of this master plan explores the master plan options.

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CHAPTER 4

Campus Master Plan

4. Campus Master Plan

4.1. Introduction

The Eagle's Field site was verified by GovGuam as viable for the intended development of the new public hospital and medical campus. After approval from GovGuam, the consultant team moved forward with developing site plan concepts for a medical campus. The team worked with GovGuam to pinpoint the essential functions of the site and incorporated them into 32 preliminary site plan concepts for the medical campus.

Using the following key criteria, approved by GovGuam, the 32 concepts were assessed to identify which preliminary concepts would be viable:

Maximum Facility Footprints

Layouts must accommodate all square footage requirements of the intended facility uses, including the pharmacy, and CDC lab.

Hospital-centric Campus

The hospital is a focal point of the campus. The building is in proximity to the helipad and existing utility hookups.

Helipad Location

A helipad is strategically located on-site to allow maximum accessibility to the hospital but minimize noise for nearby communities.

Compact Campus

An ideal campus layout will be compact, allowing future expansion if necessary. The buildings should be sited near existing utility hookups on the northwest edge of the lot and have good proximity to parking lots.

Transportation Solutions

Include a minimum of three access roads for adequate vehicle traffic flow (emergency vehicle access, main visitor access, and commercial freight delivery access). Accommodate walkability between parking lots and similar services. Include access options for commercial freight deliveries.

Emergency Services Access

Ensure opportunities for police and other emergency services to access facilities with ease.

Service Clusters

Services that are frequently interdependent are co-located near each other to maximize functionality and flow.

Campus Frontage

Achieve maximum road visibility from Route 15.

NEXRAD Radar Impact

The existing NEXRAD radar shall be unobstructed or relocated to the roof of the new public hospital to eliminate building height restrictions.

Recreational Opportunities

The existing athletic fields remain within the Eagles Field site, without disrupting the medical campus. Additionally, provide a walkable paved path to be developed connecting medical buildings and offering recreational exercise options to the community.

Ambulance & Emergency Room Access

Provide vehicular access to the emergency room that is clear and direct for ambulances and patients who may arrive in their personal vehicles.

Ultimately, GovGuam narrowed the 32 site plan concepts to the four most suitable concepts for a medical campus on Eagle's Field. The consultant team named the four concepts for ease of reference, and the pros and cons were identified for each concept.

The four concepts that were down-selected included:

1. Promenade Alternative
2. Quadrangle Alternative
3. Urban Alternative
4. Private/Public Partnerships (P3) Alternative

The height of the hospital and other medical facilities on the site are restricted to three levels due to the view shed requirement generated from the NEXRAD radar that is located on the adjacent DoD parcel. If the NEXRAD radar is relocated to the hospital's roof, there will be no height restriction for the hospital and any facilities constructed on the site. Thus, the four shortlisted site plan concepts were developed into two options for each. The two options include Option A, which illustrates a three-story public hospital, and Option B, which illustrates a four-story hospital building. Among the four concept finalists, the key components that are different include the parking layout design, the co-location of the hospital with the DPHSS clinic and GBHWC, and the location of the private medical providers to be located on the site. The details of the four final preliminary site plan concepts, along with the pros and cons of each option, are described in the following pages.

4.2. Promenade Alternative

4.2.1. Option A - Three-Level Hospital

The Promenade Alternative Option A is a curvilinear spread with separation between the public facilities and private medical provider offices. Option A - Three-Level Hospital is illustrated in Figure 4-1.

Option A envisions the hospital as a three-level building, sharing walls with the CDC lab, pharmacy, and administrative space. These facilities connect directly to a public health facility on the opposite side. In addition, a new GBHWC facility has been conceptualized as a stand-alone building near the public health center and hospital facilities.

This concept provides better transportation solutions and access to all medical services. All facilities are arranged in a semicircle around the site, with three primary entrance points: the north entrance (emergency room access and doctor/hospital staff access) located off Route 15, the Main entrance (visitor access) located across from Perez Park Road, and the south entrance (primarily for commercial and freight deliveries) located off Route 15. The three access roads enter the site and lead directly to radial parking lots, providing the maximum transportation solutions and emergency access The rest of the semicircular campus plan consists of private medical offices. This design allows for the development of six ancillary offices, which could be available to private providers via a lease.

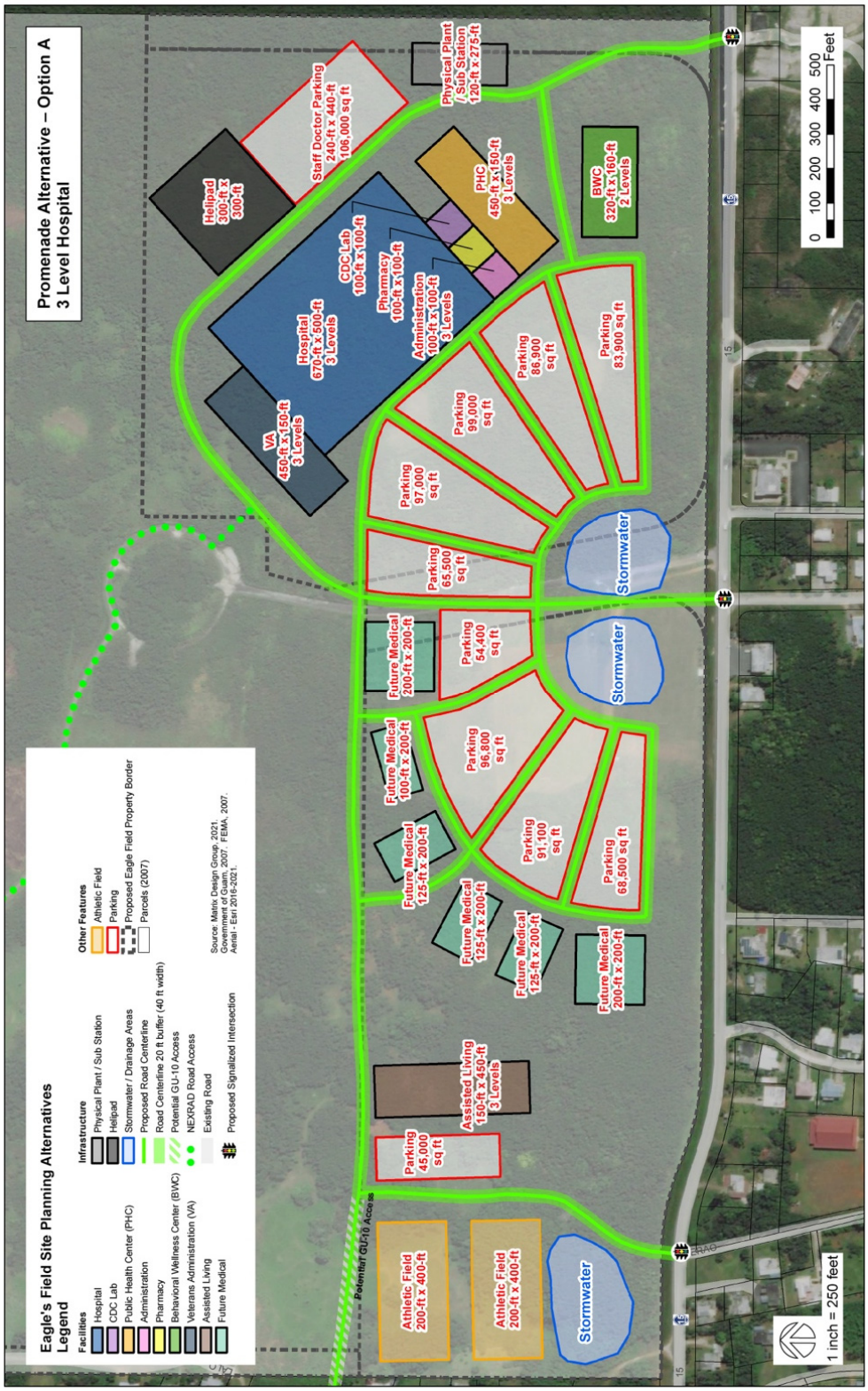
A radial parking lot branches off from the main entrance point, with substantial parking available for the hospital and accompanying functions, while still offering optimal frontage parking for both the hospital and a

semicircle of ancillary medical offices. An access road is located behind the hospital, ensuring direct access for doctor and staff parking, emergency room drop-off, and a rear-loading supply dock. The existing athletic fields are relocated to the far end of the site for the most topographically advantageous location. A dedicated parking lot is adjacent to the athletic fields, and the adjacent proposed assisted living facility.

Most key criteria are sufficiently met in this alternative. The NEXRAD facility is not severely impacted. The existing access road to the radar is maintained in its current location. Additionally, the radar can be relocated to the top of the hospital for uninhibited signal reception if no taller buildings are built on the site. The building footprints accommodate the square footage requirements for the required medical buildings. The campus is consolidated, with the hospital advantageously located with beneficial transportation solutions and emergency access. Services are clustered in proximity to functionality, and the campus concept provides maximum road frontage. The existing recreational opportunities are preserved, and the campus is centered on the hospital. The helipad is located new the emergency room, allowing easy transportation to and from the facility.

- *Pros*
  - Has a compact building development footprint.
  - Essential medical facilities can be constructed as hospital expansions.
  - Space is flexible for agency needs and future space allocations.
  - Private medical offices opposite the hospital allow the opportunity for phased growth.
  - Parking is ample and evenly distributed among facilities.
- *Cons*
  - If the NEXRAD radar is not relocated to the roof of the hospital, the future vertical expansion of the hospital will be limited to four levels.

Figure 4-1. Promenade Alternative – Option A (3-level Hospital)



Source: Matrix 2021

4.2.2. Option B – Four-Level Hospital

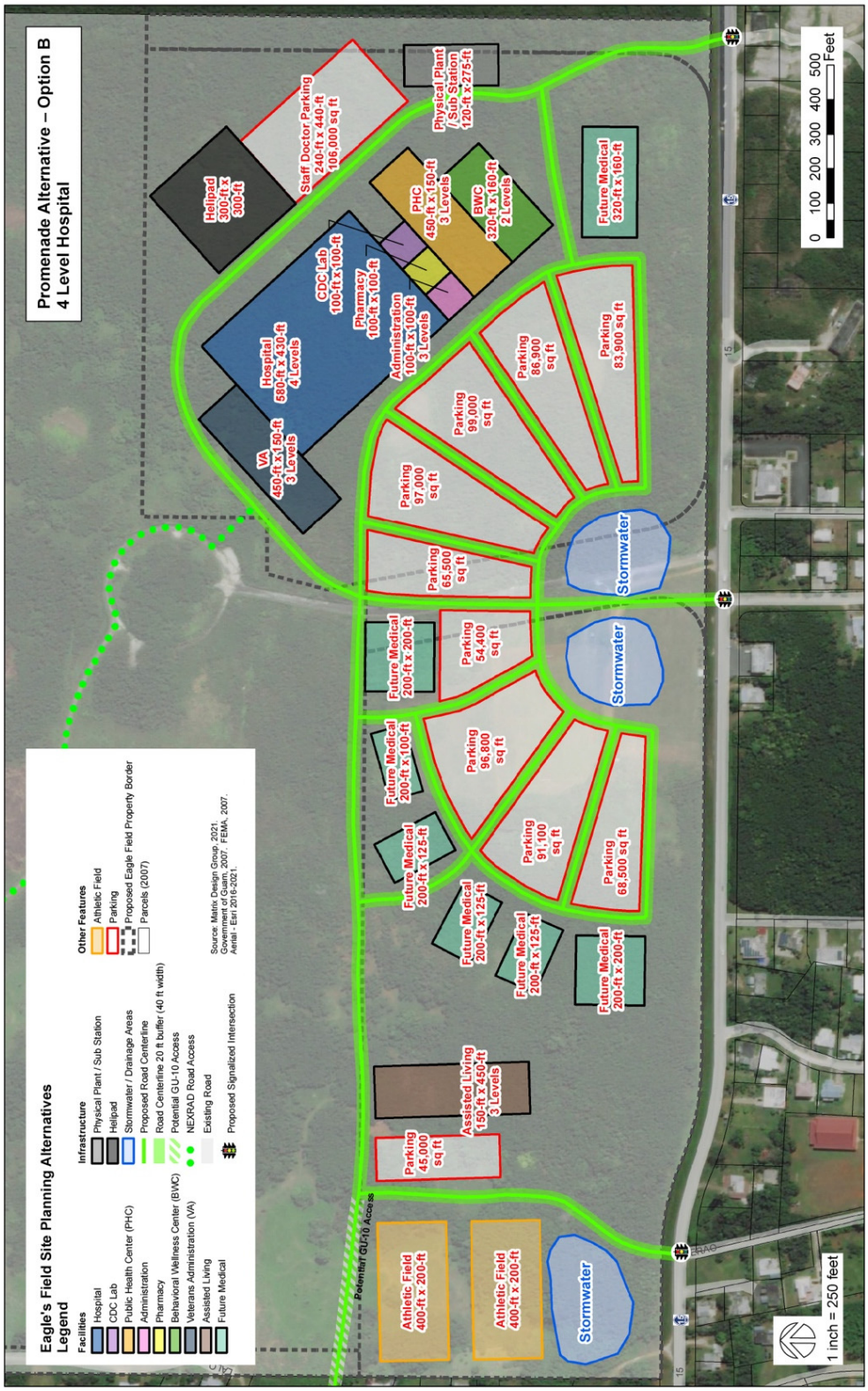
In Promenade Alternative Option B, most features remain the same as in Option A, but the hospital is transformed into a taller and narrower four-level building. In this alternative, GBHWC facilities share a wall with the public health center. The structure outlined as a GBHWC facility in Option A is reallocated to future private medical office use, such as an urgent care facility. The radial parking lot remains the same. Seven buildings are available for private medical facilities on the site, and the athletic fields and assisted living facility remain in an advantageous location on the far edge of the site. Option B – Four-Level Hospital is illustrated in Figure 4-2.

All key criteria are sufficiently met in this alternative. This option requires the NEXRAD to be relocated to the roof of the hospital, where it will be able to function unhindered and provide the hospital and provide the hospital and medical campus to have no height restriction. The facility footprints all allow maximum square footage and accommodate the space requirements. The campus is ideally consolidated with the hospital, advantageously located on the north side of the site. Three access roads enter the site and lead directly to radial parking lots, providing the maximum transportation solutions and emergency access. Services are clustered in proximity, and the campus gets maximum road frontage. The existing recreational opportunities are preserved, and the campus is centered on the hospital as the main anchor. The helipad is near the hospital, allowing easy transportation to and from the building.

- *Pros*
  - Has a compact building development footprint.
  - Essential medical facilities can be constructed as hospital expansions.
  - Space is flexible for agency needs and future space allocations.
  - Private medical offices opposite the hospital allow the opportunity for phased growth.
  - Parking is ample and evenly distributed among facilities.
  - Allows for a more consolidated construction effort with more programmatic functions co-located.
  - Provides more nongovernment medical practice facilities.
  - Offers an opportunity south of the hospital complex for a potential urgent care facility.

- *Cons*
  - None have been identified.

Figure 4-2. Promenade Alternative – Option B (4-level Hospital)



Source: Matrix 2021

4.3. Quadrangle Alternative

4.3.1. Option A – Three-Level Hospital

The Quadrangle Alternative Option A has a courtyard-style spread with a dominating hospital flanked by public health facilities standing opposite a semicircle of private medical provider offices. In this option, the assisted living facility and athletic fields are co-located on the southern edge of the site. The primary campus facilities are clustered on the northeast corner of the site, with shared parking lots between them. Option A – Three-Level Hospital is illustrated in Figure 4-3.

The public health lab and GBHWC facilities are separated from the primary hospital facility but share walls with the CDC lab and pharmacy. The medical facilities are arranged with the hospital to create a horseshoe shape around one parking lot. As phasing allows, five identical private medical office buildings can be built south of the hospital around the southern central parking lot The hospital dominates a distinct three-level facility, with two parking lots planned to the north, a helipad directly to the east across a primary road, and room for a future third parking lot addition on the west edge of the development. The hospital layout includes ancillary space dedicated to a Veteran's Affairs hospital wing and some small areas for pharmacy, administration, and CDC lab use. The campus has three access points off Route 15, each leading directly to standard parking lots surrounded by road access.

Some key criteria are met in this alternative. The NEXRAD radar facility access road is removed from primary traffic but remains accessible. The facility footprints accommodate the space requirements, but the space for the CDC lab and pharmacy is limited, with no room for growth. The campus is consolidated with the hospital located centrally. There are transportation solutions to this option, but emergency services must share access through primary access roads and busy parking lots. Services are clustered in relative proximity, but patients may have to walk between buildings. Parts of the campus get road frontage, but most facilities, including the hospital, are not fully visible from the main road. The existing recreational opportunities are preserved on the southern side of the site. The hospital is the center of the campus. The helipad is near the hospital but also near parking lots and roads, which require crossing a street to enter the hospital building. Ambulances and emergency room access could be restricted to the northern side of the hospital for more direct access. However, these functions would still compete with civilian traffic through these roads and parking lots.

- *Pros*
  - All facilities can be constructed as expansions of the hospital.
  - Future medical office space is clearly defined opposite the hospital, allowing the opportunity for considerable expansion.
  - Space west of the quadrangle is available for expansion in other healthcare uses, as needed.
- *Cons*
  - Larger hospital footprint limits the opportunity to expand beyond the identified uses.
  - Parking lots are disjointed.
  - On-site circulation may need refinement to determine optimum traffic flow.
  - Unused site space exists between the assisted living and private medical facilities.

Figure 4-3. Quadrangle Alternative – Option A (3-level Hospital)

Source: Matrix 2021

4.3.2. Option B – Four-Level Hospital

The features of this Quadrangle Option B remain the same as in Option A, although the hospital is now compacted into a taller four-level building. Option B – Four-Level Hospital is illustrated in Figure 4-4.

This alternative meets some key criteria. The NEXRAD radar facility access road is removed from primary traffic and remains accessible. The facility footprints accommodate the space requirements, although the space for the CDC lab and pharmacy is limited, with no room for growth. The campus is consolidated, with the hospital located centrally. There are some transportation solutions, but emergency services must share access through primary access roads and busy parking lots. Services are clustered in relative proximity, but patients may have to walk between buildings. Parts of the campus have road frontage, but most facilities, including the hospital, are not fully visible from the main road. The existing recreational opportunities are preserved on the southern side of the site. The hospital is relatively central to the campus. The helipad is near the hospital but also close to parking lots and roads. The helipad location requires crossing a street to enter the hospital building. Ambulances and emergency Room access could be restricted to the northern side of the hospital for more direct access. However, this function would still compete with traffic through adjacent roads and parking lots.

- *Pros*
  - All facilities can be constructed as expansions of the hospital.
  - Future medical office space is clearly defined opposite the hospital, with an opportunity for considerable expansion.
  - Space west of the quadrangle is available for expansion in other healthcare uses, as needed.
- *Cons*
  - Larger footprint limits the opportunity for hospital expansion beyond the identified uses.
  - Parking lots are disjointed.
  - On-site circulation may need refinement to determine optimum traffic flow.
  - Unused site space exists between the assisted living and private medical facilities.
  - Parking structures will be required to accommodate parking demand.

Figure 4-4. Quadrangle Alternative – Option B (4-level Hospital)

Source: Matrix 2021

4.4. Urban Alternative

4.4.1. Option A – Three-Level Hospital

The Urban Alternative Option A envisions a significant future addition to the medical campus and provides a tightly compacted campus to ensure the site remains open for this future development. The hospital is a narrow, stand-alone three-story facility with small wings dedicated to the CDC lab, administrative space, and pharmacy arranged around the oblong parking lot. The public health laboratory is sited kitty-corner to the hospital and has a dedicated parking lot on the western side of the building. The GBHWC, VA center, and assisted living facilities are arranged cascading around the parking lot to the south and are interspersed with private medical buildings and accompanying parking lots. The athletic fields are relocated on the southern edge of the site with a dedicated parking lot. Option A – Three-Level Hospital is illustrated in Figure 4-5.

This alternative meets many key criteria. The NEXRAD radar facility access road is removed from primary traffic and remains accessible. The facility footprints accommodate the space requirements with some room for growth. The campus is well consolidated, and the hospital is given a distinct location on the northern edge of the site, where there will be room for future growth or additions if needed. There are some transportation solutions, but most traffic will enter through the central access point, causing congestion. Emergency services have alternative lower-traffic paths to access buildings. The buildings are well clustered in walkable proximity, but the GBHWC facilities, the VA Hospital, and the Assisted Living facility are separated from the CDC lab and pharmacy by a parking lot. Compared to the other options, this alternative ensures that significant portions of the campus get road frontage. The existing recreational opportunities are preserved on the southern side of the site. The hospital is relatively central in the campus but has limited access and egress options. The helipad is well-located on the site west of the hospital, where there will be limited noise impact. Ambulances and emergency room access could be restricted to the northern side of the hospital for more direct access, but there is no parking lot for emergency room patients who do not arrive by ambulance.

- *Pros*
  - The compact and affordable buildup creates a distinct east-west facing campus.
  - The east campus has a mix of medical and healthcare uses and considerable expansion opportunities north of the helipad.
  - This option has maximum road frontage for most facilities.
  - Athletic fields are separated from medical facilities.
  - Opportunities exist for significant additions on the northwestern edge of the site.
- *Cons*
  - The large hospital footprint and condensed campus may limit on-site parking opportunities.
  - On-site circulation may need refinement to determine optimum traffic flow.
  - Parking structures will be required to accommodate parking demand.

Figure 4-5. Urban Alternative – Option A (3-Level Hospital)

Source: Matrix 2021

4.4.2. Option B – Four-Level Hospital

Urban Alternative Option B – Four-Level Hospital has similar features to Option A, although the hospital is modified to have a smaller footprint and becomes a four-story facility. This allows the addition of a northern parking lot. Option B – Four-Level Hospital is illustrated in Figure 4-6.

This alternative meets key criteria. The NEXRAD radar facility access road is removed from primary traffic and remains accessible. The facility footprints accommodate the space requirements with some room for growth. The campus is well consolidated, and the hospital is given a distinct location on the northern edge of the site, where there will be room for future growth or additions if needed. There are some transportation solutions, but most traffic will enter through the central access point, causing congestion. Emergency services have alternative lower-traffic paths to access buildings. The buildings are well clustered in walkable proximity, but the GBHWC facilities, the VA Hospital, and the assisted living facility are separated from the CDC lab and pharmacy by a parking lot. Compared to other options, this alternative ensures that significant portions of the campus get road frontage. The existing recreational opportunities are preserved on the southern side of the site. The hospital is relatively central in the campus but has limited access and egress options. The helipad is well-located on the site west of the hospital, where there will be limited noise impact. Ambulances and emergency room access could be restricted to the northern side of the hospital for more direct access.

- *Pros*
  - The compact and affordable buildup creates a distinct east-west facing campus.
  - The east campus has a mix of medical and healthcare use and considerable expansion opportunity north of the helipad.
  - Athletic fields are separated from medical facilities.
  - Opportunities exist for significant additions on the northwestern edge of the site.
  - The smaller footprint permits additional parking adjacent to the medical center.
- *Cons*
  - The large hospital footprint and condensed campus may limit on-site parking opportunities.
  - On-site circulation may need refinement to determine optimum traffic flow.
  - Parking structures will be required to accommodate parking demand.

Figure 4-6. Urban Alternative – Option B (4-Level Hospital)

Source: Matrix 2021

4.5. Private Public Partnerships (P3) Alternative

4.5.1. Option A – Three-Level Hospital

In P3 Option A, the three-level hospital and ancillary facilities form a compact central node in the site, with large portions allotted to future private medical development on the site's east and west edges. The hospital shares a wall with the VA clinic and a portion of the public health care clinic and incorporates some small ancillary spaces for the pharmacy, CDC lab, and administrative offices. This design relies on two parking lots that allow two-way access and egress to the hospital. A grid street pattern to the hospital's south places the GBHWC facility and four private medical care offices near access roads, sharing parking lots. Private Public Partnerships (P3) Alternative is illustrated in Figure 4-7.

In this option, primary hospital access comes from the northernmost road. Stormwater drains cluster around the central primary access point, and one drain takes over the naturally inclined southern portion of the site. The athletic field is oriented north-south on either side of a central road just uphill from the southern stormwater drain.

This alternative meets some key criteria. The NEXRAD radar facility access road is still accessible but reliant on some primary traffic roads. Compared to other alternatives, this option offers a large footprint for all facilities, but limits room for additional growth. The campus is not well consolidated and spreads across the entire site. However, the hospital is given a distinct location on the northern edge where there will be room for future growth or additions if needed. There are some transportation solutions, but most traffic will enter through the central access point, causing congestion. Emergency services have alternative lower-traffic paths to access buildings. The buildings are well clustered in walkable proximity, but the GBHWC facilities, the VA Hospital, and the assisted living facility are separated from the CDC lab and pharmacy by a parking lot. Compared to other options, this alternative ensures that significant portions of the campus get road frontage. The existing recreational opportunities are preserved on the southern side of the site. The hospital is relatively central in the campus but has limited access and egress options. The helipad is well-located on the site west of the hospital, where there will be limited noise impact. Ambulances and emergency room access could be restricted to the north side of the hospital for more direct access, but there is no parking lot for visitors.

- *Pros*
  - Distinct development opportunities for the campus to maximize the use of site acreage.
  - Uses near the northern property line are related to the medical campus.
  - Significant expansion opportunities exist for P3 development between the medical campus and Route 15.
  - Considerable expansion opportunity exists north of the heliport.
- *Cons*
  - On-site circulation may need refinement to determine optimum traffic flow.
  - Parking structures will be required to accommodate parking demand.

Figure 4-7. P3 Alternative – Option A (3-level Hospital)

Source: Matrix 2021

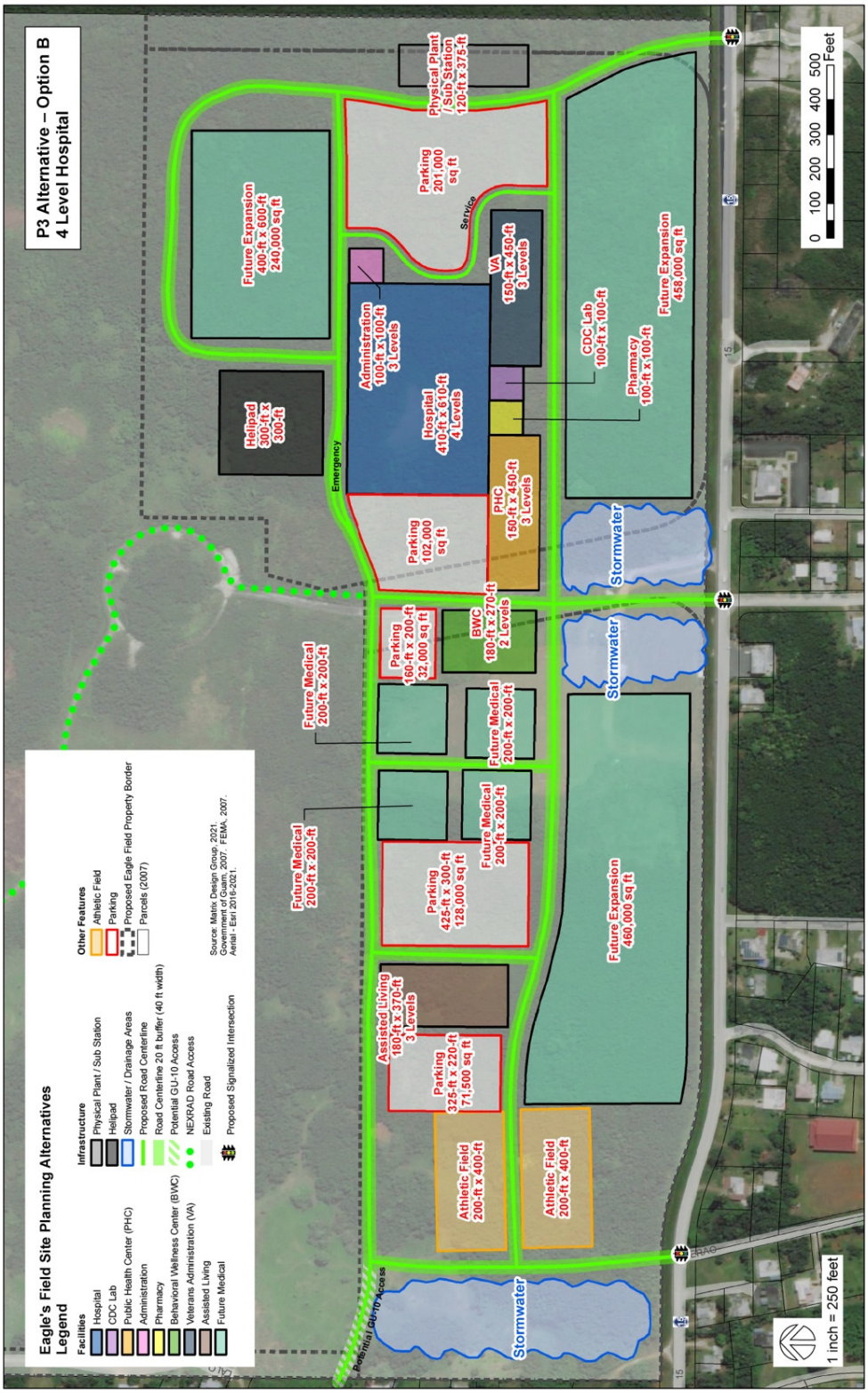
4.5.2. Option B – Four-Level Hospital

The features of P3 Alternative Option B – Four-Level Hospital remain similar to those in Option A. In Option B, the hospital is consolidated into a taller and narrower structure with four levels. Additional parking is available on the northern portion of the site. Option B – Four-Level Hospital is illustrated in Figure 4-8.

This alternative meets some key criteria. The NEXRAD radar facility will require a new access road. The facility footprints accommodate the space requirements, but the space for additional medical offices is limited. The campus is consolidated with the hospital located centrally. There are some transportation solutions along with emergency access that cuts through the northern parking lot. Services are clustered in relative proximity, but patients will have to walk between buildings. Parts of the campus get road frontage, but the hospital is not fully visible from the road. The existing recreational opportunities are preserved on the southern side of the site. The helipad is near the hospital but requires crossing a street to enter the building.

- *Pros*
  - Distinct development opportunities for the campus to maximize the use of site acreage.
  - Uses near the northern property line are related to the medical campus.
  - Significant expansion opportunities for P3 development exist between the medical campus and Route 15.
  - Considerable expansion opportunity exists north of the heliport.
  - Larger surface parking lot is on the north side of the hospital.
- *Cons*
  - On-site circulation may need refinement to determine optimum traffic flow.
  - Parking structures will likely be required to accommodate parking demand.

Figure 4-8. P3 Alternative – Option B (4-level Hospital)



Source: Matrix 2021

4.6. Selected Concept /Option: Promenade Alternative – Option B

During the In-Progress Report (IPR) meeting, the Governor selected Promenade Alternative – Option B as the preferred concept and option. This alternative is the result of numerous design iterations and meetings and incorporates many of the following key attributes and advantages:

- Athletic fields are relocated to the southern side of the site, retaining community recreation opportunities for the Village.
- Drainage is integrated into the natural topography of the site, allowing drainage from the northeast to the southwest.
- The campus physical plant is oriented along the east end of the property and minimizes distances to connect on-site utilities to off-site utility connections.
- The proposed plan offers three intersections along Route 15 for accessing the campus and distributing traffic flow.
- The center access point is opposite Perez Park Road as the principal access point for medical campus patients, visitors, and employees.
- The east access road is dedicated to the emergency room and staff traffic, ensuring minimal traffic impediments for emergency room access.
- The site plan allows for a future east-west connection along the northern property line to Route 10.
- The hospital helipad is ideally situated near the north and east property lines to maintain the maximum separation from existing private residences to the south and west. Thus minimizing noise in the surrounding residential neighborhoods.
- Buildings are developed compactly, and all facilities can be constructed as hospital expansions.
- Future medical-related facilities are located opposite the hospital. The siting allows ample opportunity for expansion.
- Parking opportunities meet and exceed the required parking for anticipated traffic. No parking structure is required, thus saving considerable construction costs.
- The average walking distance from the hospital complex parking lots and future medical facilities to the hospital complex is only 475 feet or less than one-tenth mile. Meeting the national standard.
- The staff/doctor parking area allows for 372 parking spaces, which is more generous than the parking requirements and ensures that parking will accommodate staff growth.
- Provides aesthetically pleasing facades for all buildings while not sacrificing health care functions or customer service capacity.
- Circulation between facilities can occur entirely on-site once users are on the parcel.

4.6.1. Inspiration and Layout of the Campus Master Plan

The selected campus plan has clustered the hospital and medical facilities, creating a curvilinear arrangement of buildings and parking areas around the primary entry to the project from Route 15. This primary entry is centrally located along the east-west boundary of the property, immediately across from Perez Park Road, to allow efficient transportation access to the medical campus and convenient circulation throughout the campus to all planned uses. In addition, the land use plan establishes a system of three arterial intersections along Route 15 that will be necessary to manage the traffic generated by the medical campus. One of the proposed arterials is located across from Southern Cross Lane and is planned for use as the emergency vehicle access point. In addition, a new east-west arterial access point is shown on the plan along the northern property line. This arterial will provide future access to Route 10 and offer a direct connection to the emergency room/trauma center, alleviate future traffic congestion in the area, and minimize impacts to the Route 15/Route 10 intersection.

The new hospital and related medical uses have been grouped in the northeast portion of the campus master plan. This plan layout creates substantial development opportunities in the future for the additional medical and office uses to be phased in. These expansion opportunities may result in significant additional revenue for the hospital. This additional revenue could provide not only an offset to the cost of hospital development but a continuing revenue source to help offset the hospital's operational expenses.

The plan provides for continuing the recreational opportunities at Eagle's Field (two athletic fields) by delaying the need to relocate the fields until a later development phase. The planned buildout of the campus will relocate the athletic fields to the west end of the property in a location that will meet public recreational needs while respecting the land's natural topography.

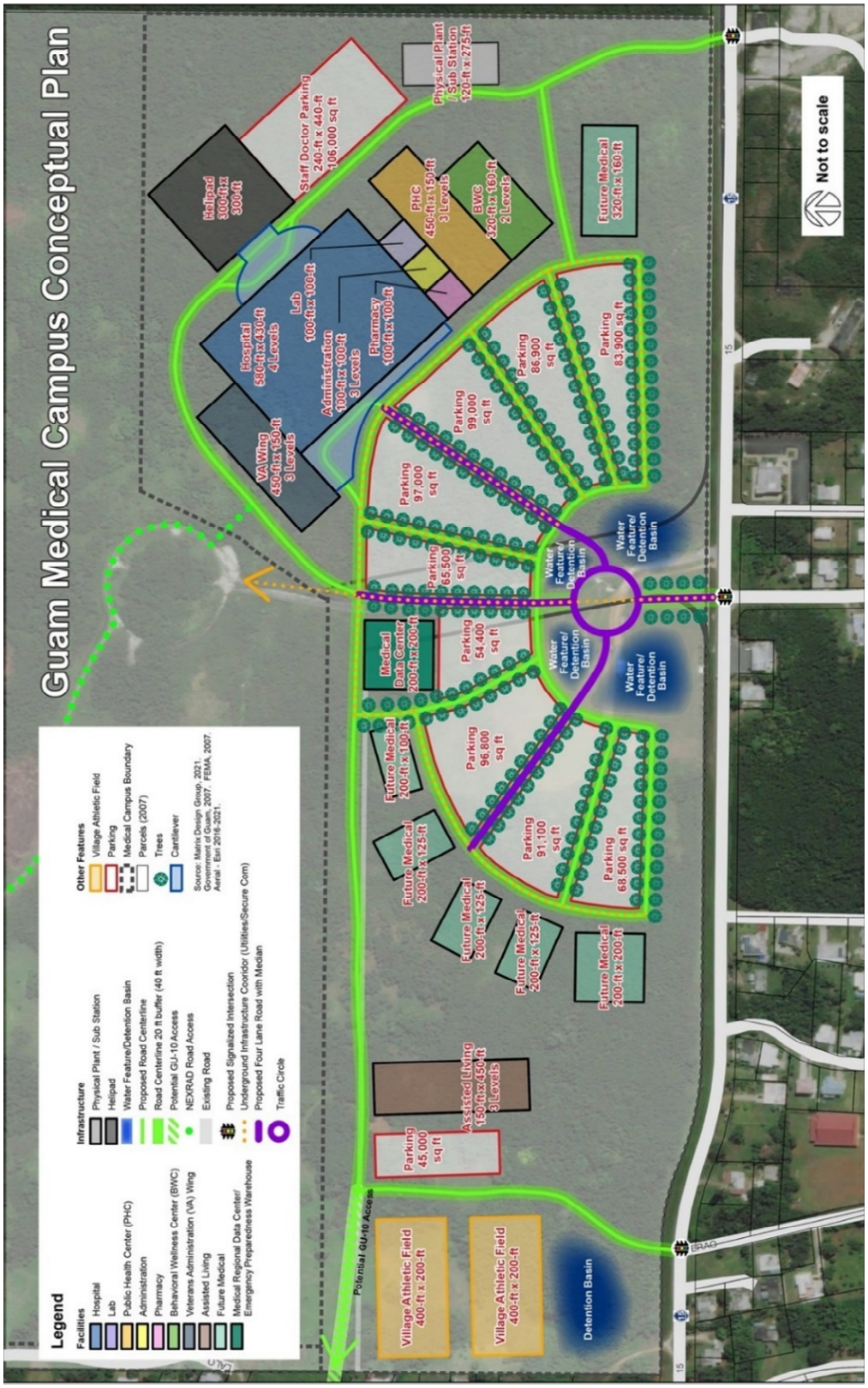
The planned medical campus will minimize the cost of infrastructure development by orienting most buildings close to the primary utility corridor along Route 15. By carefully phasing the development of the campus, up-front infrastructure costs will be reduced.

A helipad has been located near the northeast property line to minimize noise impact on residential areas and appropriately meet hospital emergency transport needs.

The existing NEXRAD radar facility north of the property has been identified as a potential constraint to development. The radar facility will limit the height of any nearby buildings or structures. No buildings or structures are permitted within 1,000 feet of the facility. Outside the 1,000-foot clear zone, buildings may be constructed up to 70 feet in height, or 342 feet above mean sea level. However, if the NEXRAD antenna is located on the hospital's roof, the buildings and structures planned in the campus master plan can be constructed up to four or more stories. The Navy may also consider relocation of the NEXRAD, which may generate opportunities to offset the cost of a license/lease for the Eagle's Point property.

The selected Conceptual Medical Campus Master Plan (MCMP) is illustrated in Figures 4-9 through 4-13. ***Note****: that these are only conceptual in nature to provide a visual of what the campus could look like.*

Figure 4-9. Promenade Option B – Preferred Medical Campus Master Plan

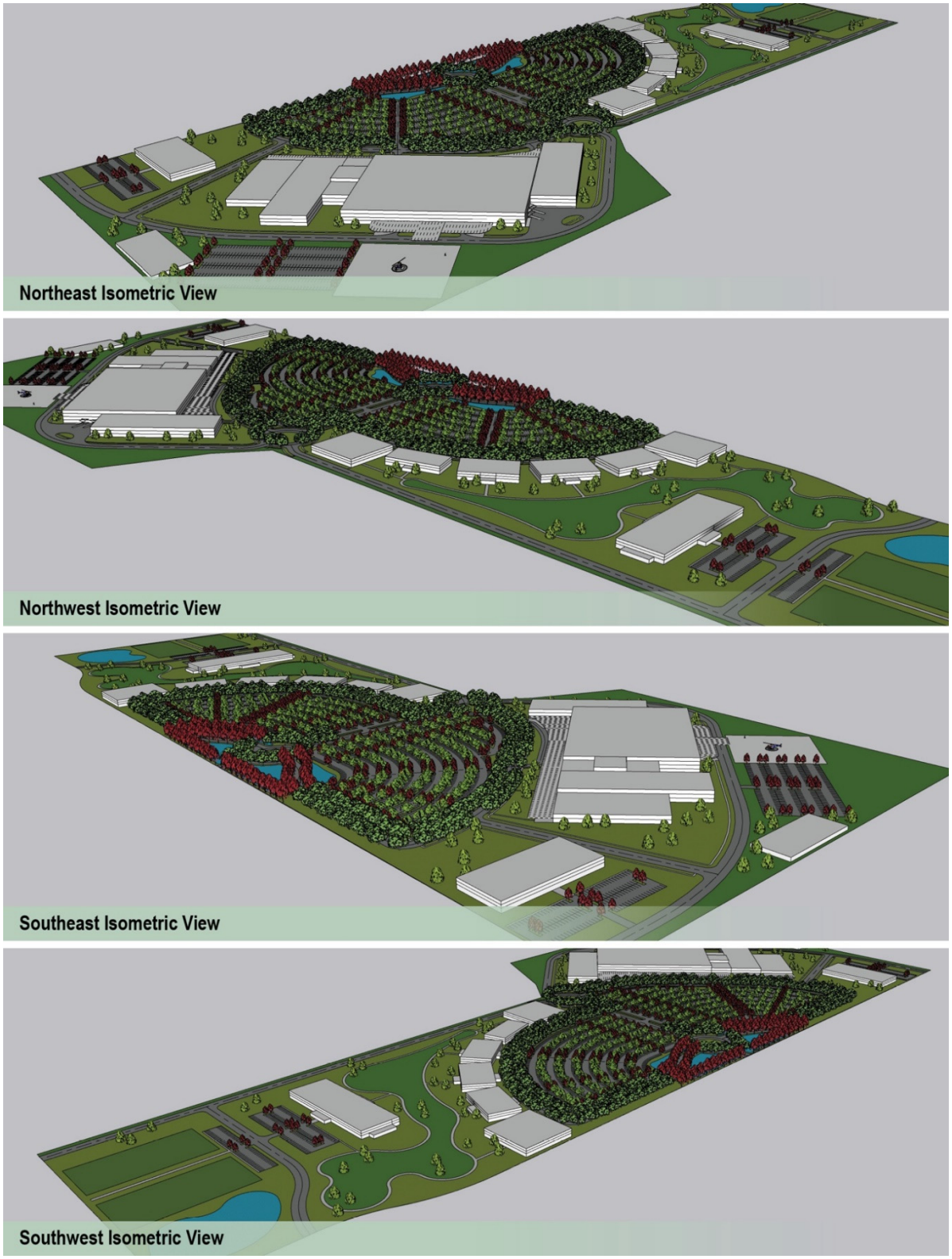


Source: Matrix 2022

Figure 4-10. Illustrative of Preferred Guam Medical Campus Plan

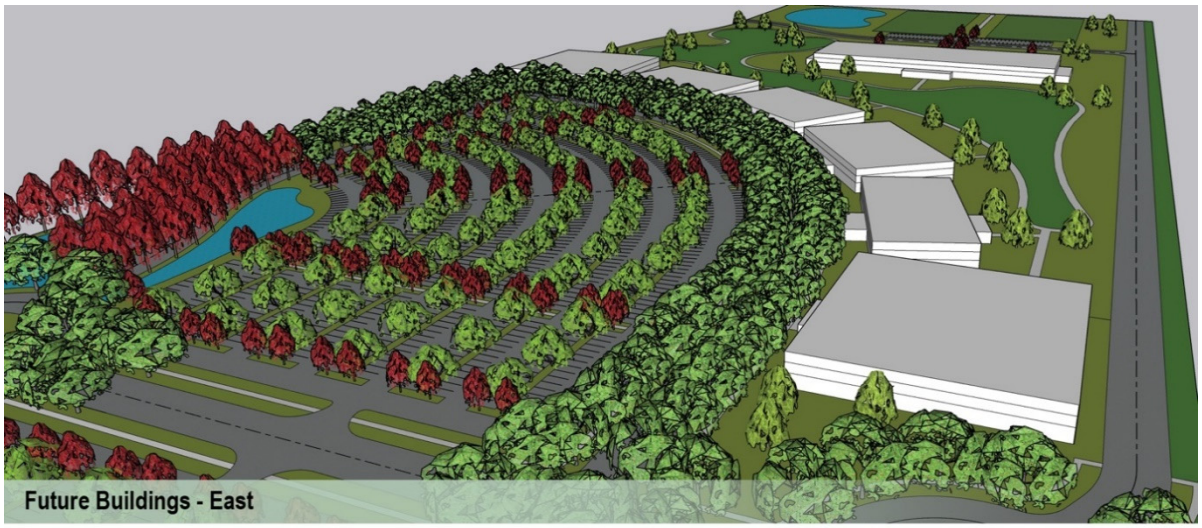
Source: Matrix 2022

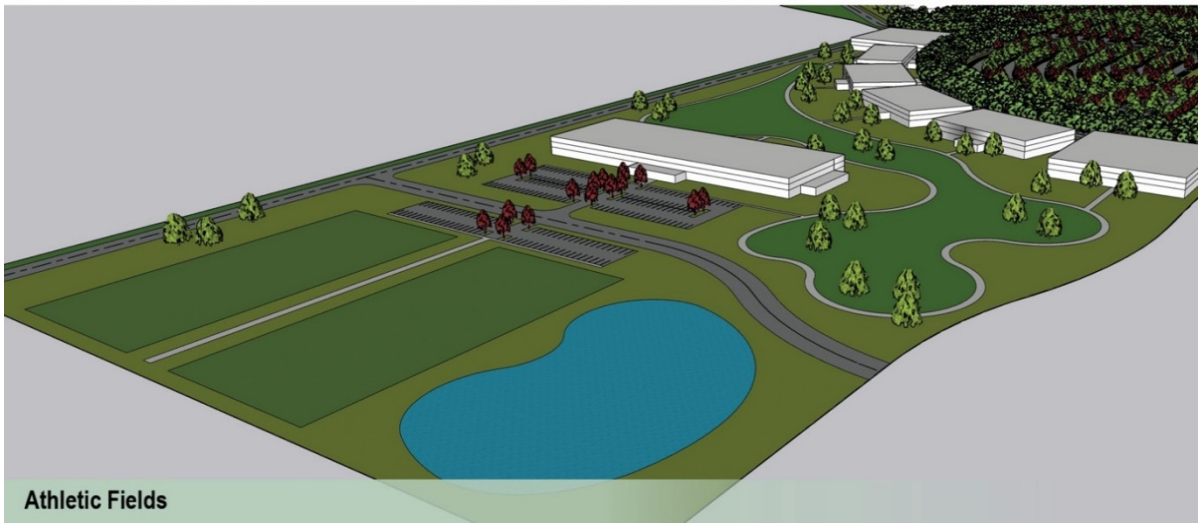
Figure 4-11. Medical Campus Birdseye Perspective Views



Source: Matrix 2022

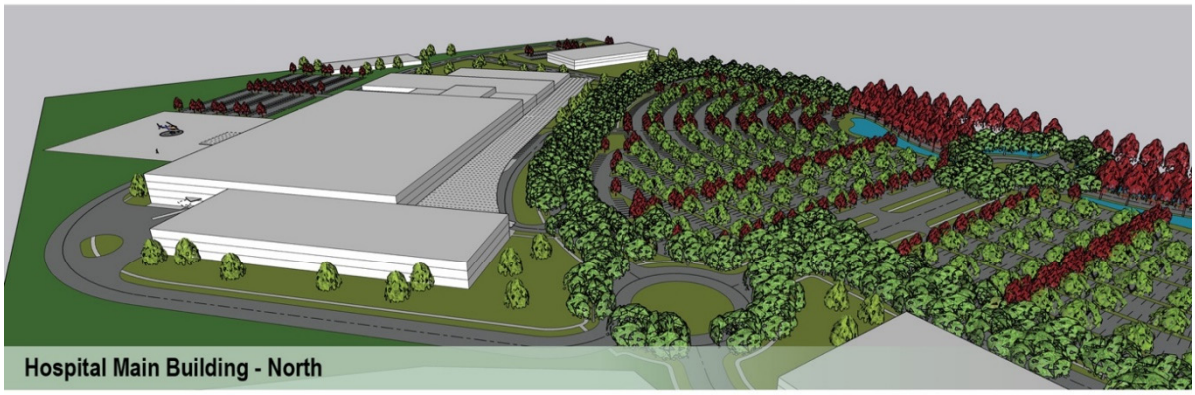
Figure 4-12. Medical Campus Birdseye Perspective Views (continued)

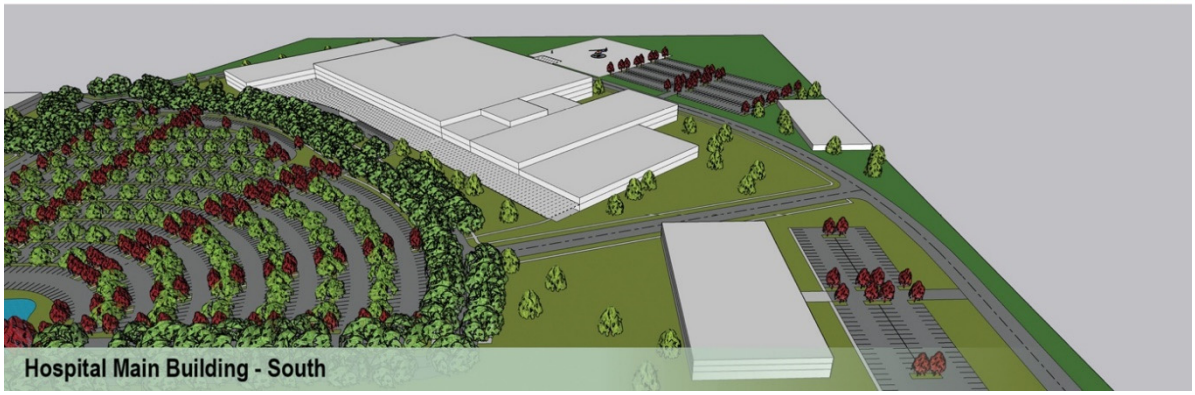




Source: Matrix 2022

Figure 4-13. Campus Birdseye Perspective Views (continued)





Source: Matrix 2022

4.7. Realizing the Vision

The selected Guam Medical Campus Master Plan meets the criteria that address the needs for the future of medical care for Guam and fits the chosen site. However, bringing the Guam Medical Campus Master Plan vision to fruition will involve much more than a physical campus master plan. Beyond the commitment to realize the vision of state-of-the-art, full-service health care for the citizens of Guam, the additional necessary steps for a successful development process are discussed in Chapters 5 and 6.

CHAPTER 5

Campus Development Phasing Plan

5. Campus Development Phasing Plan

5.1. Phased Development Plan

Eagle's Field was determined as the preferred location for the new medical campus, this chapter presents a multi-step process, or phased approach, to moving from site selection to facility completion within a 5-10-year horizon. Although it is possible to execute the project as a single, prolonged effort, phasing has several advantages highlighted here as *plan opportunities that should be revisited before implementing each phase with Funding Feasibility/Cost Management* – Project phasing allows work to proceed in strategically defined increments without securing funding for all project components. This is especially important given the number of facilities and infrastructure improvements required to execute the entire Medical Health Care Campus Master Plan, the overall duration of the project, and along with Guam's budgetary constraints. Phasing will allow GovGuam to target outside funding opportunities based on the specific parameters and goals of each phase and to allocate internal monetary resources based on real-time financial information and actual revenue.

Resource Availability – Phasing presents a set of major project milestones during which the availability of resources for upcoming tasks can be evaluated, and resource allocation, supply and equipment procurement, and/or scheduling can be modified as needed. Phasing provides for periodic assessments that minimize delays.

Emergent Variables – Project success can be impacted by unforeseen circumstances such as unexpectedly high birth rates, large migrant populations, and natural disasters that change community needs and resource demands. In the dynamic context of medical science and health care, community needs, and goals could be impacted by newly available technologies and treatment protocols, emergent health risks, and/or changing facility design standards. A phased approach to campus development allows the evaluation of service priorities, equipment purchase plans, laboratory specifications, and building configurations at phase intervals before construction to best capitalize on plan and design flexibility, the potential to integrate services, and innovative medicine.

Sustainability/Resiliency – As with the potential to evaluate and integrate unforeseen advances in medical care and equipment into development plans, phasing supports the periodic assessment and adoption of newly available products, processes, and cost-saving measures that can enhance the sustainability and resiliency of the medical campus and associated services.

Ultimately, phasing provides a series of project milestones and opportunities to proactively reassess and respond to dynamic circumstances to ensure the best outcomes in the most efficient and cost-effective way, The proposed phase defined below is designed as a general framework and nominal project schedule to be reined before project initiation and again before phase implementation.

The target completion date for the new public hospital is within 5-10 years. The government is also working to accelerate the timeline for designing and constructing the new GMH facility, the CDC lab, the helipad, and related infrastructure improvements. Bill 121-36, the 21st Century Healthcare Center of Excellence Construction Act of 2021, authorizes GovGuam to enter into a lease-back arrangement with a contractor for construction and maintenance, thereby speeding up the development process.

Project initiation will, in all cases, depend on the availability of funding for Phase I and, ultimately, the completion of the most critical campus components. The estimated cost of developing the new hospital, related medical facilities, and the required infrastructure is between $800 million and $1 billion.

5.1.1. Proposed Phase 1: Infrastructure Development

The infrastructure development will need to start after GovGuam obtains the lease for the land parcel. The most critical infrastructure needs to bring primary electricity to the site at the proposed GPA substation location. DPW will need to create the three required intersections and access points to the site, with initial construction access for utility development and the sites of the hospital and CDC lab. DPW will also need to begin construction of some of the interior roads. GWA will need to create connections to water sources and wastewater systems. This phase can also include the development of water wells and water storage locations. The potential for temporary utility hook-ups during construction is also anticipated.

5.1.2. Proposed Phase 2: Hospital Development

Phase 2 of the project is intended to include a new four-story Guam Medical Hospital with approximately 161 beds. A new CDC lab next to the hospital will also likely be included in Phase 2, along with a pharmacy and administrative offices. An on-site helipad is located northeast of the hospital near the emergency/trauma services. This is a critical component of the hospital and medical campus and will be constructed in Phase 2. If an agreement can be reached with the U.S. Navy, Phase 2 will also include the relocation of the NEXRAD radar facility antenna to the roof of the new hospital. This agreement must be reached before the development of the new hospital because of the proposed four-story height of the facility. Considerable infrastructure improvements must be completed both off-site and on-site to develop Phase 2. The campus has been planned to minimize up-front infrastructure costs. Two of the three vehicular arterial accesses from Route 15 are included in Phase 2. See Chapter 3, Section 3.3, for further detail on infrastructure requirements for Phase 2.

5.1.3. Proposed Phase 3: VA Facility Development

A new VA facility will be constructed immediately adjacent to or near the new hospital in Phase 3 of the project. A new Public Health Center is also included in Phase 3, along with a new Behavioral Wellness Center, both located adjacent to the hospital. Additional infrastructure improvements will be required to proceed with Phase 3.

5.1.4. Proposed Phase 4: Assisted Living Facility Development

Phase 4 of the medical campus includes the addition of an assisted living facility. The planned additional medical facilities and offices illustrated in the medical campus plan are included in Phase 4 and could continue to develop for many years. Relocation of the two existing athletic fields will need to occur at some point as Phase 4 moves into the development process. Phase 4 provides a number of opportunities for expanding and creating a medical campus that delivers 21st-century health care.

5.2. Development Phasing Flexibility

The initial infrastructure required for the medical campus to move forward is substantial. This infrastructure investment is critical for the development of the campus. This initial investment will most likely be the responsibility of GovGuam. As the campus plan moves forward, a few smaller phases could occur in each phase to minimize the total up-front infrastructure investment, or this additional infrastructure can be carried by follow-on projects and developers.

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CHAPTER 6

Implementation Plan

6. Implementation Plan

6.1 OVERVIEW

The Implementation Plan provides the initial steps required to address and support a complex project as the development of a future modern medical complex, which will be home to the state-of-the-art replacement for the current Guam Memorial Hospital (GMH). The long-range vision for a centralized medical campus will serve the people of Guam for the next several decades. Due to the complexity and integration of several critical phases of planning, funding, construction, and operational interface underpins the need for a centralized organization set up for the long-term execution of the plan.

6.2 ACTION 1

Set Up a Project Management Office (PMO)

- A Project Management Office (PMO) needs to be established by GovGuam and GEDA to oversee and take responsibility for the development of the Medical Health Care Campus Master Plan
- GEDA will need to prepare an RFP to retain a 3rd party consultant to be the Program Manager, and to set up the PMO
- GEDA needs to advertise the PMO RFP and select a Program Manager to manage the PMO
- GovGuam needs to structure an internal task force of stakeholder agencies to provide dedicated support to the PMO.

6.3 ACTION 2

PMO to Develop Finance, Design, Build and Maintain (FDBM) RFP

- GovGuam needs to finalize the acquisition plan for the new GMH and subsequent medical facilities
- GEDA and the Office of the Governor need to establish the financial resources for the contract
- PMO will also need to prepare an FDBM RFP to hire a contractor
- PMO will also advertise the FDMB RFP
- PMO is to select a consultant/contractor to finance, design, construct, and operate the new hospital

6.4 ACTION 3

PMO to Coordinate with GovGuam for Off-Site Infrastructure Improvements

- GovGuam must appropriate funding for all required off-site utility and infrastructure improvements required to support the initial phases of the campus plan
- GovGuam to prepare and negotiate an MOA with GPA / GWA for off-site electrical, water, and wastewater improvements
- PMO will oversee GPA/ GPA throughout the off-site utilities and infrastructure improvements design and construction
- PMO to prepare an RFP for a consultant to oversee CM, or GPA / GWA to self-perform CM services
- PMO to coordinate with DPW for roadway improvements, intersections construction, and traffic management infrastructure.
- PMO to coordinate with DPW for internal Phase I access roads

6.5 ACTION 4

On-Site Infrastructure Improvements

- On-site utility improvements will be designed and constructed through the GPA / GWA
- GovGuam to appropriate funding for utility and infrastructure improvements
- GovGuam to prepare and negotiate an MOA with GPA / GWA for on-site utility improvements
- PMO to oversee CM of the DPW for on-site road and traffic improvements
- PMO to prepare an RFP for a consultant to oversee CM, or DPW to self-perform CM services

6.6 ACTION 5

Phase Planning

- PMO to work with GovGuam to outline and develop the next phases in the development of the Medical Campus
- PMO will assist in identifying the critical components and elements required for the next phase
- PMO will coordinate with GovGuam agencies and GEDA to determine the financial requirements to support the planned phases
- PMO will assist in the long-term planning and design requirements to support specific facilities and additional infrastructure requirements to support the planned phases.
- PMO will update the Campus Master as construction is completed and new phases are developed
- GovGuam to appropriate funding for utility and infrastructure improvements
- GovGuam to prepare and negotiate an MOA with GPA / GWA for on-site utility improvements
- PMO to oversee CM of the DPW for on-site road and traffic improvements
- PMO to prepare a RFP for a consultant to oversee CM, or DPW to self-perform CM services

GOVERNOR'S SEAL
ISLAN GUAHAN

Matrix