ALBANY
New Providence
The Bahamas

Consolidated Environmental Impact Assessment

Submitted to the Bahamas Environment, Science and Technology Commission

For Park Ridge Securities Corp.

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EXECUTIVE SUMMARY

Project overview, location, nature of the development

Albany is a private golf, marina and residential community comprising approximately 570 acres on the southwestern coast of the island of New Providence in The Bahamas. The proposed project will be an exclusive, residential, resort-style oceanfront community with a wide array of amenities. The property is located approximately 5 miles south of the Nassau International Airport, between South Ocean Golf Course and the historic settlement of Adelaide.

Key amenities of the development will be provided the Albany Club featuring an 18-hole, Ernie Els Design, Signature Golf Course with Club House, a state-of-the-art fitness center and a Beach Club offering dining experiences and a family water-park. The project includes a world-class, large vessel marina, with approximately 90 slips capable of servicing mega-yachts. A marina village will offer 100 marina apartments, outdoor dining, and select shopping experiences with an ambience reminiscent of Mediterranean harbours. The project has been designed along the tenets of 'new urbanism'; incorporating a state-of-the-art approach to residential planning within a distinctly Bahamian context in architectural and environmental considerations. Residential opportunities will be provided by approximately 375 single family home-sites and fourteen (14) large five acre lots around an equestrian center.

Environmental impacts analyzed

The entirety of the site is in private ownership. The project is bisected by West Bay Road. The 70 acre portion south of West Bay Road encompasses the vacation home known as Albany House, with 3,200 feet of beachfront, and a mix of landscaped garden areas interspersed with degraded native habitats. North of West Bay Road, approximately 250 acres of pineland has been degraded through the lack of a natural fire regime and draw down related to its use as wellfields for potable water extraction by the New Providence Development Company. Previous logging and gravel extraction activities have also negatively impacted this area. Near shore marine areas consist of shallow sand flats with minimal algae and seagrass coverage in the area of West Bay.

Environmental impacts include changes in land cover and use as well as potential losses of floral biodiversity through land clearing and construction of the golf course and residential components, as well as the dredging and creation of the marina basin and access channel. Temporary impacts related to construction work consist of increased sediment transport and deposition in terrestrial and marine communities.

A team of planners, engineers, biologists, hydrogeologists, landscape and golf course architects has collaborated on project design. Special attention was given to the impacts of the marina basin and entrance channel on groundwater and coastal resources. Based on detailed studies and incorporation of proper design considerations, the environmental impacts of these elements have been reduced.

Positive aspects of the project include socio-economic benefits, marine habitat creation, restoration and management of upland and coastal buffer preserve areas, maintenance of the site free of exotic species and utilizing native species in the landscaping design to promote biodiversity and wildlife usage.

Mitigation

Mitigation efforts include (but are not limited to); methods to minimize adverse impacts of construction work through turbidity management and sediment control, delineation of pine and coastal strand preserve areas, restoration of degraded areas, commitment to pursue Blue Flag certification for the marina and coastal zone, providing treatment for all wastewater and monetary contributions to provide off site beach access opportunities for residents of New Providence.

Given the existing degradation in evidence and considering the long-term scenario for continued spread of exotic species and absence of habitat management efforts, the project is considered a positive change in use from an environmental perspective.

Environmental Management Plan

To operate the project in a manner that maintains environmental considerations in the highest regard, an Environmental Management Plan (EMP) will be developed and implemented. This plan will include, but not be limited to;

- Detailed construction guidelines including mitigation measure,
- Monitoring requirements,
- Emergency measures,
- Post-construction operation details.

Details will be finalized once all approvals and permits are in place such that it is a true reflection of final project design and as-built condition.

CHAPTER 1: INTRODUCTION AND OBJECTIVES

1.0 Objective of the EIA

This Environmental Impact Assessment report is provided to assess and quantify impacts to the physical, biological and socio-economic environment that may result from planned development at Albany House, New Providence, The Bahamas. Goals of the report are to clearly describe and illustrate the proposed work and to characterize and quantify natural resources present on site. Thence, with regard to the scope and nature of the proposed development, describe reasonably expected changes to the natural environment in the vicinity of the site that may result. These may be positive improvements (such as removal of non-native exotic plant species) or losses in diversity and habitat function.

Environmental Impact Assessment reports are a prerequisite for development approval and an important natural resource management tool in the Bahamas. In the absence of additional regulatory mechanisms, the EIA is the most important method to achieve development that is sensitive to the unique natural resources of the country and allows sustainable economic growth. The EIA process, through mapping and habitat survey, can allow better planning and siting of proposed facilities. Through incorporation of an Environmental Management Plan and mitigation measures, consideration of long-term natural resource conservation elements can be made.

1.1 Scope of the EIA

The scope of the current report is limited to the immediate vicinity of the project area in terms of physical and biological aspects and, in terms of socio-economic aspects, the island of New Providence and the entire Bahamas. Effects on migrating fauna are not considered except where indicated. Impacts are those which can be reasonably inferred given the nature of the development and subject site, based on experience with similar projects. Long term monitoring and assessment surveys were not part of the data gathering for this report, thus species may use the site that were not observed during the fieldwork period. Best attempt to consider long term and wider geographical scale of impacts is made.

This Environmental Impact Assessment report (EIA) has been prepared by a collaborative working group of coastal scientists and engineers, project owners, neighbors and local residents, marine and terrestrial biologists, hydrogeologists, architects and town planners. Companies and individuals that contributed to the report, whether in writing, planning sessions and meetings or personal comments are as follows;

- *Duany Plater-Zyberk and Company*
- *Missimer Groundwater Science Inc.*
- *Halltech Environmental and Geotechnical Consulting Services*
- *Smith Warner International*
- *Turrell & Associates, Inc.*
- *Olsen and Associates, Inc.*
- *Integrated Building Services*
- *New Providence Development Company*
- *Park Ridge Securities Corporation*
- Pericles Maillis, *Maillis & Maillis*
- *Coastal Systems International*
- *Mosko Realty*

Figure 1-1: Location map showing New Providence Island in The Bahamas

Figure 1-2: Detail of western New Providence showing subject property location

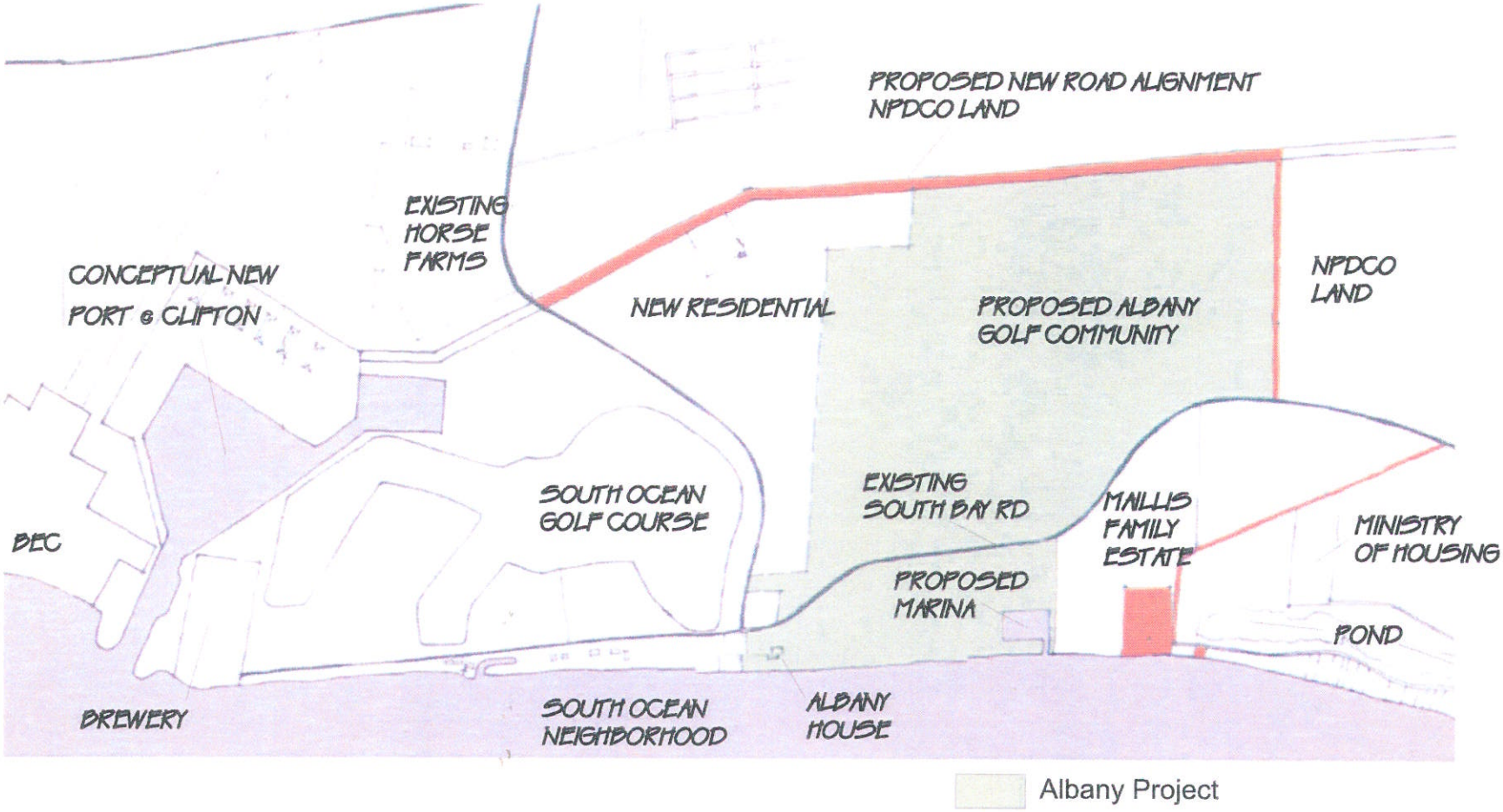


Figure 1-3: Map of surrounding land-use, existing and proposed.

CHAPTER 2: PROJECT DESCRIPTION AND ALTERNATIVES

2.0 Detailed description of the proposed development, including site plan and footprints

Albany will be a private golf and residential community comprising approximately 570 acres on the southwestern end of the island of New Providence in The Bahamas. This will be an exclusive, secure, residential resort-style oceanfront community with a wide array of amenities. The property is located just 5 miles from the Nassau International Airport and between the area known as South Ocean and the historical settlement of Adelaide.

Key amenities of the development will be provided the Albany Club featuring an 18-hole, Ernie Els Design, Signature Golf Course with Club House, a state-of-the-art fitness center and a Beach Club offering dining experiences and a family water-park. The project includes a world-class, large vessel marina, with approximately 90 slips capable of servicing mega-yachts. A marina village will offer 100 marina apartments, outdoor dining, and select shopping experiences with an ambience reminiscent of Mediterranean harbours. The project has been designed along the tenets of 'new urbanism'; incorporating a state-of-the-art approach to residential planning within a distinctly Bahamian context in architectural and environmental considerations. Residential opportunities will be provided by approximately 375 single family home-sites and fourteen (14) large, five acre lots around an equestrian center.

The southwestern end of the island is characterized by higher-end residential developments such as Lyford Cay and Old Fort Bay. Albany is located on the southwestern end of New Providence, which has a remote reputation, allowing for a more peaceful and tranquil living experience. The site encompasses approximately 3,200 feet of white sandy beach with tropical dune vegetation, which has secured the shoreline over the years. In addition, the southern location provides the seasonal advantages of protection from the northern winds during the winter months while capturing the cool prevailing winds from the southeast during the summer months. The Nassau International Airport and Million Air Jet Center are just 5 miles away, yet Albany is not in the approach or take-off corridors of the airport, which produces overhead noise to other developments in its path. Albany is within a short drive of the Atlantis Resort and Casino and the newly proposed Cable Beach Resort and Casino re-development.

Subject to market demand, project owners intend to further develop the area surrounding the marina such that it will become a social center for the Community that may house marina and ocean view condominium styled apartments. A selection of boutique stores will provide a vibrant mix of dining experiences, selected convenient retail shopping, and water sport opportunities for Albany residents and members. In addition, Albany will provide extensive children's programs, play areas, and childcare. Albany will be a gated community with 24-hour state-of-the-art security monitoring equipment and personnel.

Table 2-1: summary of land allocations and units

Project Component	Acres	Percentage	Details
Golf Course	215.0	37.5%	18 Holes
Club-House	7.9	1.3%	2 (Beach Club and Golf Club)
Marina	16.3	2.84%	+/-90 Slips
Marina Village	9.3	1.6%	20,000 sq.ft. Retail/Commercial
Equestrian Center	76.3	13.3%	Fourteen 5 acre lots, stables, riding loop and ancilliary
Residential/Commercial/ Common (including greenspace)	211.9	37%	375 (Mixed single family lots, apartments, cottages, commercial, storage and common areas)
Conservation Areas	35.5	6.2%	Natural preserve (excluding golf course buffers)

Chart 2.1: Albany Development Details

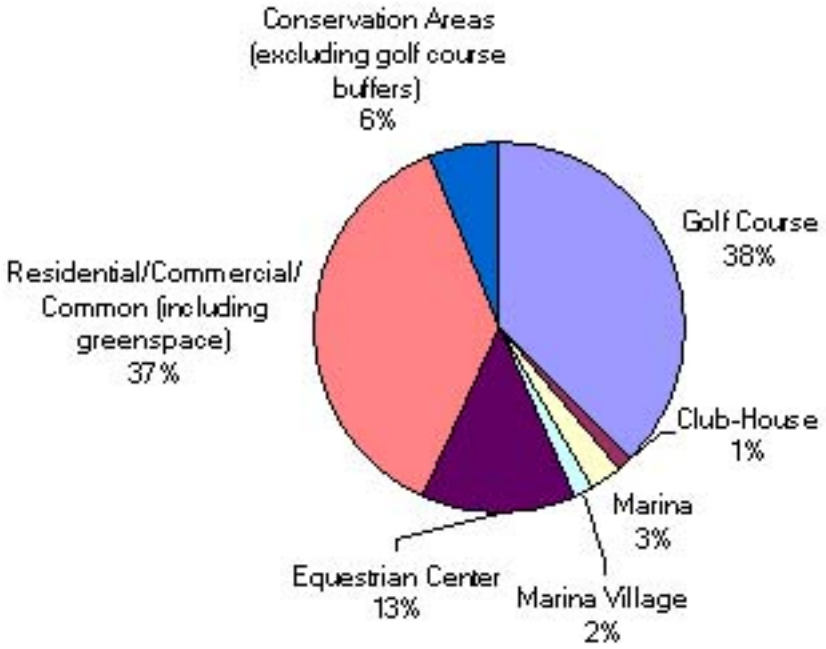


Figure 2-1: Site plan, please refer to pull-out versions in the Appendix I

Financial Estimates

The following represents the current base case construction budget for the first phase of the Development.

Modify Existing Albany House	$3,200,000
Golf Course	$14,500,000
Clubhouse Square	$3,500,000
Water Park & Adult Lap Pool	$5,000,000
Marina	$8,700,000
Perimeter Wall & Security Equipment	$3,620,000
Entry Gates	$2,900,000
Internal Roads, Parks, Ponds and Lot Servicing	$13,170,000
Off-Site Improvements	$3,570,000
Other	$7,950,000
First Phase - Total Estimated Costs	**$66,110,000**

2.0.1 Duany Plater-Zybek Project Description

The following text by the planning firm, DPZ, 2005 is provided to set the stage for the Albany project in terms of design goals and intentions to give the reader a measure of the level of effort and creativity involved in planning development stages for this project.

Albany, on New Providence Island, is designed to introduce a new model of resort development to the Bahamas, one that recalls the time when resorts were not overgrown hotels but full-fledged towns, like nearby Nassau. While the 500-acre site includes beautiful beaches, this new town will not be entirely dependent on its waterfront for value. Rather, the goal of the plan is to use urbanism to create an environment that is lively, walkable, mixed-use, and full of activities.

Figure 2-2: Showing the concept of blue shaded community - urban centers, and pedestrian zones where radii shown are walkable in five minutes, DPZ, 2005

With a structure based on the transect, which organizes development from most urban to most rural, the plan provides a great variety of experiences within the 500- acre site, from a dense town center to more rural lots at the edges. This change in character is supported by all elements of built environment, including the architecture, landscape, thoroughfares, and lighting. The plan proposes the construction of a new road to divert highway traffic around the town, away from Bay Road, which cuts off the waterfront and the lower portion of the site from the bulk of the 500 acres. This new arterial allows Bay Road to become a calm, pedestrian-friendly avenue that runs through the town's main square all the way to the beach club village at the western edge of the site. This village is designed around an existing clubhouse, emulating the way villages historically grew out of outbuildings surrounding a farmhouse. Next to the main square, a small, unfinished harbor is completed and detailed as a marina. Far from being a "parking lot for boats," the marina follows the tradition of charming places like the harbor of Portofino, Italy, where the water acts as an extension of the public space. The main square and marina area is lined with four- and five-story mixed-use buildings and is home to the greatest density and most activity in the town.

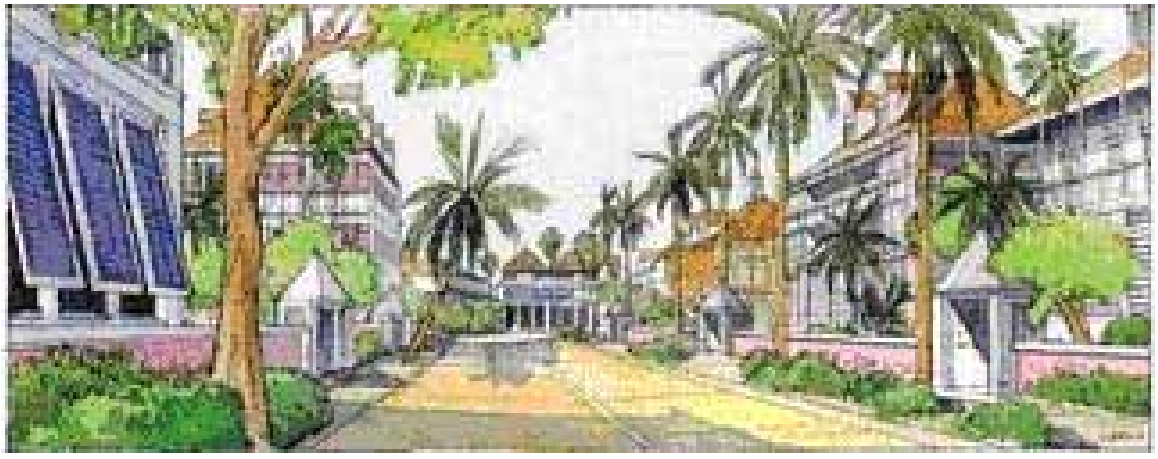


Figure 2-3: Rendering of typical community walkway, DZM, 2005

Outside of the town center are two neighborhoods, structured according to the five-minute edge-to-center pedestrian shed. Each of the neighborhoods has its own neighborhood center, containing higher density and a greater mix of uses than the surrounding areas. In addition to these centers, the neighborhoods contain smaller focal points, squares, and greens within each ward. These spaces will be very private and are flexible according to the needs of the nearby residents. The neighborhood streets are generally oriented toward the water, providing views deep into the site. Following the transect, they are more urban in character in the southern portion of the town and around the marina, becoming informal roads towards the north. Most of the thoroughfares going east-west are pedestrian-only, reducing the total paved area in the town. An additional system of walkways, detailed as boardwalks, runs through portions of the site. Much of the northeastern portion of the site comprises a large, carefully designed golf course. The golf clubhouse forms the basis for another major square, known as the Clubhouse Square, which also

includes a tennis club and swimming club. More informal activity spaces, such as playgrounds and playing fields of various sizes, are distributed throughout the site. The plan draws upon the tradition of Bahamian and Caribbean building types and urban patterns for much of its inspiration, particularly the urban and architectural regulations. These plan-specific codes ensure that much of the infrastructure is designed to sit lightly on the site and that the architecture is well adapted to withstand flooding and hurricanes. The landscape, too, emphasizes the use of native species or those well suited to the local environment, making the vegetation naturally resilient and beautiful. It is hoped that Albany will be able to replicate or even improve upon the success of similar resort towns on the Gulf Coast of Florida, such as Seaside and Rosemary Beach.

2.0.2 Golf Course

Central to project plans is an eighteen hole, Ernie Els and Jack Nicklaus designed golf course. As a 'core' course it will not be fragmented by residential units but will comprise a world-class signature golf course.

Figure 2-4: Golf Course Outline

The course is located in the northeast section of the property spanning approximately 215 acres. It will be buffered to the northeast by a 32.5-acre conservation area in addition to approximately 70 acres of natural buffers, which will create privacy to the golf holes. These areas will be improved by removing any nuisance vegetation, thinning out some of the underbrush, cutting view corridors where needed and supplementing existing vegetation with additional plantings. Plant materials may be left in place or removed and transplanted as required. Grading and drainage concerns may necessitate clearing impacts to these buffer areas but any buffer cleared during construction will be replanted with appropriate native vegetation once the clearing activities are completed. All measures are planned to maintain plant species diversity and provide wildlife value.

The golf course holes will be cleared once buffer areas have been delineated and flagged. Special attention will be paid to specimen trees, which will be identified by qualified personnel, inside and outside of the buffer areas. Trees, outside the buffers on the course will be preserved, moved or cleared at the discretion of the golf course designers. If any native vegetation within the golf course buffers is impacted due to grading and contouring activities during construction, those areas will be restored using the recommended native planting palate on Table 6-1 (Chapter 6.0). Equipment used in construction will include bulldozers, backhoes, dump trucks, earth moving pans, grading equipment and other heavy machinery as required. Sediment control methods to control dust or sediment-laden run-off will include silt fences and mulching of cleared areas. Dust may also be controlled when needed by wetting the roads down with water trucks. After clearing and preliminary grading, fill will be brought in for the course, graded and sculpted by the golf course architects to result in the championship layout that is desired. After grading, specialized drought and salt tolerant turf grass will be planted and watered in along with different specialized grass species for the greens. At this time, species under consideration are: Tiff Sport Bermuda on the fairways and Tiff Eagle Bermuda on tee areas. This species will require irrigation with freshwater. Bermuda grasses are one of the most commonly used warm-season turf grasses. They are highly variable sod-forming perennial with extensive creeping rhizomes and stolons, to 1.5 feet tall. Numerous hybrids and cultivars have been developed, including some that tolerate cooler conditions. It usually requires full sun and some varieties require frequent mowing (twice weekly during periods of rapid growth).

Bermuda grass is native to Africa where it thrives on fertile soils. Today, most of the Bermuda grasses used for turf are hybrids of two different *Cynodon* species: *C. dactylon* and *C. transvaalensis*.

Traits of Bermuda used as turf:

- Excellent drought tolerance
- Excellent wear tolerance
- Tolerates low mowing (extremely low for ultra dwarf varieties)
- Heat tolerant

- Salt tolerant
- Establishes rapidly
- Usually poor shade tolerance

Coarse grain sand will be used for the sand traps.

Since Best Management Practices will be implemented for the use of pesticides, herbicides and fertilizers on the golf course, no measurable adverse environmental impacts are expected. Fertilizer, herbicide and pesticide use will be carefully controlled to allow optimal turf grass growth with minimal demand for additional chemicals. The types of fertilizer and pesticides to be used and the timing of application will follow the U.S, Golf Association (USGA) turf grass growing guidelines. No chemicals banned for use in the Bahamas will be considered for use. Some of the key management methods to be employed on this golf course will include: 1) fertilization only as deemed necessary to maintain healthy turf grass, 2) use of appropriate fertilizer based on soil requirements and seasonal climatic conditions (i.e. during wet periods the best method of fertilization may be to use a liquid fertilizer that is rapidly absorbed and does not run off into the surface water or enter the groundwater and during dry periods a slow release, granular fertilizer may be used to optimize nutrient release with assimilation of the turf grass), 3) pesticides will be used only as necessary with spot applications used to cure specific problems, and 4) only pesticides approved by the U.S. Environmental Protection Agency and the USGA which are biodegradable within the guidelines established by the appropriate regulatory bodies will be used. In addition, Albany is committed to the development and implementation of a monitoring program to properly manage nutrient and chemical use.

There are four lakes planned for construction on the Albany Golf Course. They will be located along hole 5; hole 12; hole 16; and between holes 9, 17 and 18 as seen on Figure 1 (Appendix VII). All water bodies will be lined, avoiding the potential for contamination of any groundwater resources associated with run-off containing elevated levels of nutrients or landscaping chemicals. These lakes will also provide a storage capacity for stormwater as well as habitat for wading birds. The lake liner specifications can be found as Figure 6 (Appendix VII).

The Club facilities will include a spa, pools, dining facilities, tennis courts, a pro shop, men's and women's locker rooms. A nearby park with walking paths can be easily accessed by car or foot from the pedestrian friendly community of Albany.

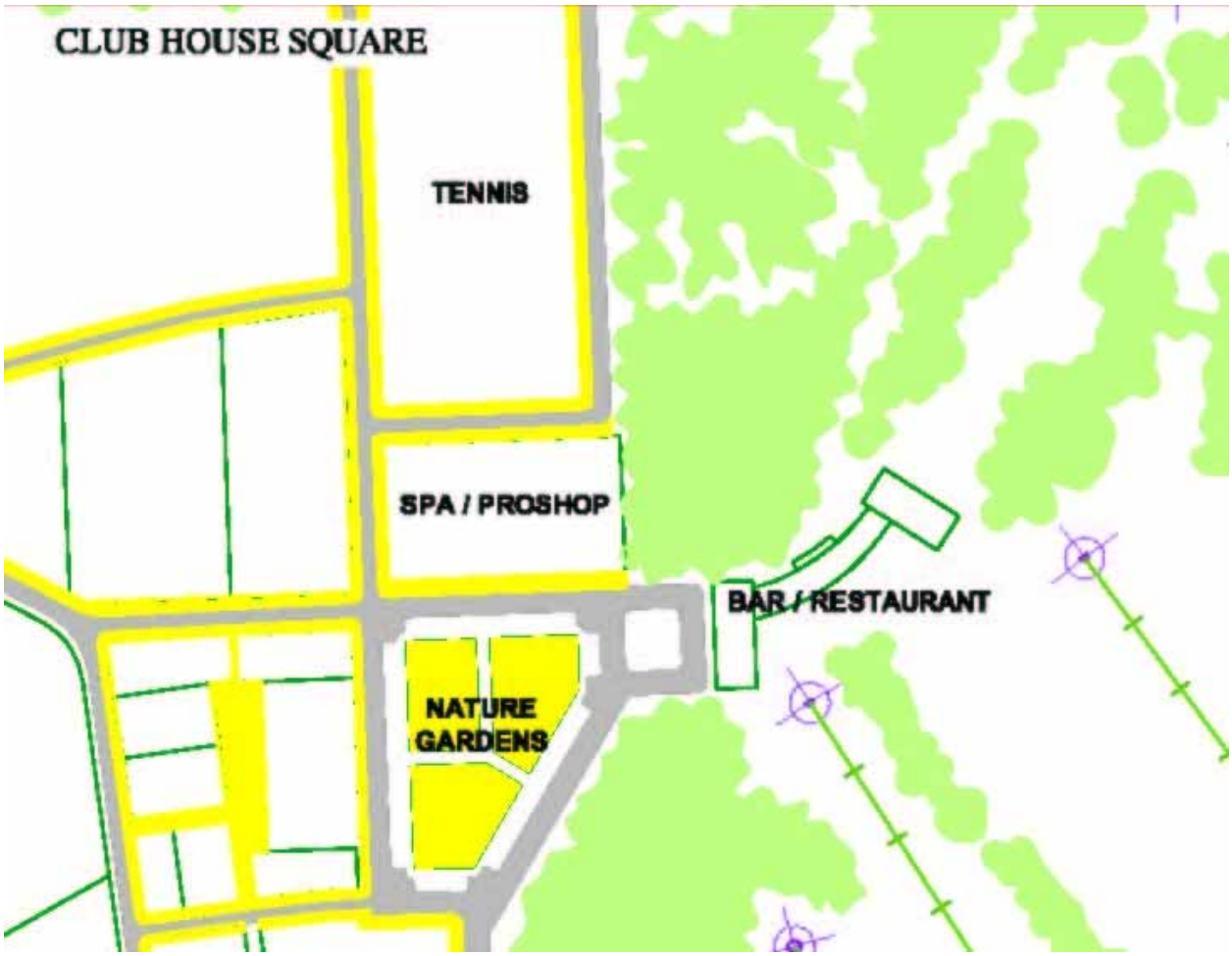


Figure 2-5: Detail of golf club-house and amenities

2.0.3 Marina

The Albany marina will be a state of the art facility built around the site of an existing yacht basin that was dug out by the previous owner, Chalopin, ten years ago but only temporarily connected to the ocean. The marina entrance will be cut through the shoreline near the location of historical inlet to Adelaide Creek. A side channel will be cut east off the main channel to connect to the adjacent property in the area of the historical inlet. Remnants of this historical connection to the ocean can be seen on the adjacent property, the Maillis family tract, where an inland waterway once ran east all the way to Adelaide (prior to 1930). This connection has been permanently severed by natural processes (hurricanes in the 1920s), the wreck of a large ship carrying lumber during a hurricane in the 1920s and by subsequent developments to the east.

Adelaide Creek is located approximately 1,706 feet from the marina and the Adelaide Creek channel is located approximately 6,800 feet from the marina, as seen on Figure 2 (Appendix VII). At these distances, Albany Marina will not impact Adelaide Creek.

Figure 2-6: Detail of the marina basin

The existing basin onsite was dredged by the previous owner to a depth of 12 feet below the low water mark. After years of silting and vegetation debris build up in the enclosed, non-flushed basin, the overall depth has decreased to an average of 10 feet MLW.

Special attention has been given to the effects of the inlet on narrow beaches on the south coast of New Providence. Jetties will be constructed both north and south of the new inlet to keep sand on the beaches and out of the channel. Natural sediment transport is from east to west, so one would expect sand to pile up on the east side of the eastern jetty (on the adjacent property owner's land) and for sand to erode on the down-drift side of the inlet, or the west side of the western jetty. The Albany project has 3,200 linear feet of shoreline. To offset any losses to erosion, clean sand will be placed on the beaches as is common on Florida beaches and around the world. The beaches will then be monitored for erosion over time and corrective measures taken should beaches ever recede to the current alignments (a full discussion of this topic and the science used to project the impacts is provided in Appendix II).

Consideration of the effect of this marina basin on groundwater resources has also been made, please refer to Appendix III. New Providence Development Company has operated well-fields for potable water extraction north of the proposed marina basin for over 30 years, and in doing so have gained significant insight into the groundwater resources of the area. It is in the best interests of the project not to impact groundwater resources and for this reason an intensive hydro-geological study was carried out to ensure appropriate measures could be incorporated to avoid any impacts. It was determined, even though the basin would have a limited impact on the aquifer, a curtain wall should be constructed around the northern perimeter of the basin to ensure any impacts are avoided.

The marina basin will be excavated while it is still isolated from tidal marine waters by an upland plug, which will not be removed until all dredging and bulkhead construction, with the related turbidity increases that can result, has been completed. When the plug is removed, turbidity curtains will be used to contain any materials remaining in suspension. Excavation will be accomplished with backhoes or other appropriate heavy machinery, with generated fill used for areas of upland development. Dredging offshore will most likely be accomplished with a hydraulic dredge, which will pump material into holding cells on the property's uplands. Turbid runoff from this operation will be prevented from running back to the sea.

The access channel has been located to optimize safe navigation into the facility and avoid sensitive marine habitats. Approximately 500,000 cubic yards of sand will be removed from an area of 17.59 acres to create a channel 16' deep at MLW for almost a mile (4,800 lf). Details of this work are provided in Appendix II.

Walls of the marina basin may be concrete, curved in the corners to avoid stagnant areas. Natural stone rip-rap will line the entrance channel, tying into the jetties to dissipate wave energy. Natural rip-rap will also be used under the structure proposed in the northwest corner of the basin to provide shallow water habitat and avoid stagnation in that portion of the marina. The basin bottom will be sloped gradually towards the entrance to help prevent reduced water movement. Flushing studies show that the basin will flush adequately with 90% of the water exchanging with the tides over a 24-hour period. To optimize water quality, a commitment to obtain Blue Flag Certification is detailed in Chapter 6, Mitigation Measures.

Fueling facilities will be provided and designed to be user friendly and safe for the public. Fuel tanks will be located on the uplands and will include spill containment basins surrounding the tanks. Fuel spill containment equipment will be located at the dockmaster's facility and will include enough boom to encircle the largest vessel and enough fuel absorbent materials to clean up a spill. Written procedures will be posted at the facility and personnel trained to respond. Fuel shut off valves will be located at critical junctions and an emergency shut off will be easily accessible.

Docks at Albany Marina will be concrete floating, using concrete guide piles. Fend-off piles between slips will most likely be wood piles. The Florida Department of Environmental Protection (FDEP) and the U.S. Environmental Protection Agency (EPA) still allow the use of CCA treated pilings and wood (with conditions), due to the lack of viable, cost effective alternatives. The FDEP does require all CCA pilings to be PVC wrapped to prevent leaching of chemicals into the water column. Any pressure treated piling used will be wrapped with PVC to prevent leaching of preservatives into the water column. Wrapping the pilings has also been shown to extend the life of the piling almost indefinitely. Information from EPA and American Wood Preserver's Association (AWPA) on the use of CCA products and why they are continued to be used. ACQ treatment is not available for submersible pilings and hardwood pilings are not considered appropriate and are not approved for salt water use. The cost of using composite piling in place of CCA would be hundreds of thousands of dollars in the case of the Albany project, as long as concrete floating docks are used. If floating docks were not used, the cost of the marina would increase by millions of dollars. For the Bahamas in general, the cost of using non CCA piling and framing could double the cost of building marinas in the country as compared to comparable marinas in Florida.

A dry storage building is proposed for the adjacent upland, which will keep small boats out of the water when not in use. This facility has several advantages: boats are stored out of the elements, cleaned before they are put away so they are ready to use at the owner's discretion, boat bottoms are kept clean (minimizing use of antifouling paints) and space in the yacht basin is maintained for larger vessels which can not be easily hauled out of the water. The dry storage facility will be located away from the edge of the water, access being provided by a concrete road which a forklift will be used to launch and haul boats. A water recycling and sediment-trapping device will be installed in the boat wash down area to capture any pollutants and to minimize water use.

The marina basin wet slips will accommodate vessels up to 240 feet (73 meters) in length. In accordance with observed trends in the yacht market towards larger, shallow draft vessels, the additional large slips were incorporated to offer a unique amenity to the area of New Providence.

Figure 2-7: Artistic rendering of conceptual marina facility, DPZ, 2005 (not based on current design)

The marina village surrounding the facility will include multiple story condominiums, open-air dining and a street scene which will serve to make the harbour area a center of activity as yachts come and go. The intent is to give the marina village a 'Portofino, Italy', feel with colors and architecture to set the area apart. The marina has been designed for very large vessels, which will give the harbour an aristocratic look while preserving a large open basin needed for the increased turning radius of these large yachts. This large basin will also enhance views.

2.0.4 Residential

The residential community is comprised of large estate lots along the ocean and smaller home sites closely fitted into the central town, which is a hallmark of the designer. This is done in a way to promote community and pedestrian friendly access in a landscaped and traffic calmed environment. Please see figure 2-3. In addition, fourteen (14) five acre ranch-style lots are located in the northwest quadrant of the property surrounding an equestrian center with stables and horse riding amenities. Average lot size for the remainder of home sites is 7,200 square feet or 0.16 acres. Restrictive covenants for homeowners will outline landscaping protocols, clearing protocols and setback requirements. These requirements are briefly described in Chapter 6 (Sections 2 and 4) and are found in Appendix VIII (Master Declaration of Covenants, Conditions & Restrictions).

The existing Albany House will be maintained as a clubhouse, social center and recreational amenity for all future residents and guests. This large, beautiful estate home was built by Jean Chalopin (French cartoonist and creator of the Inspector Gadget character) on 70 acres of beachfront property. The estate already features gardens, ponds, walking trails and quiet rest areas away from the main structure, a large well appointed home with many rooms, corridors and dining areas with an open-air feel. Amenities will include dining facilities, pools, fitness areas, beach access, lounges and changing areas with fresh water showers for those retreating from the sand and salt.

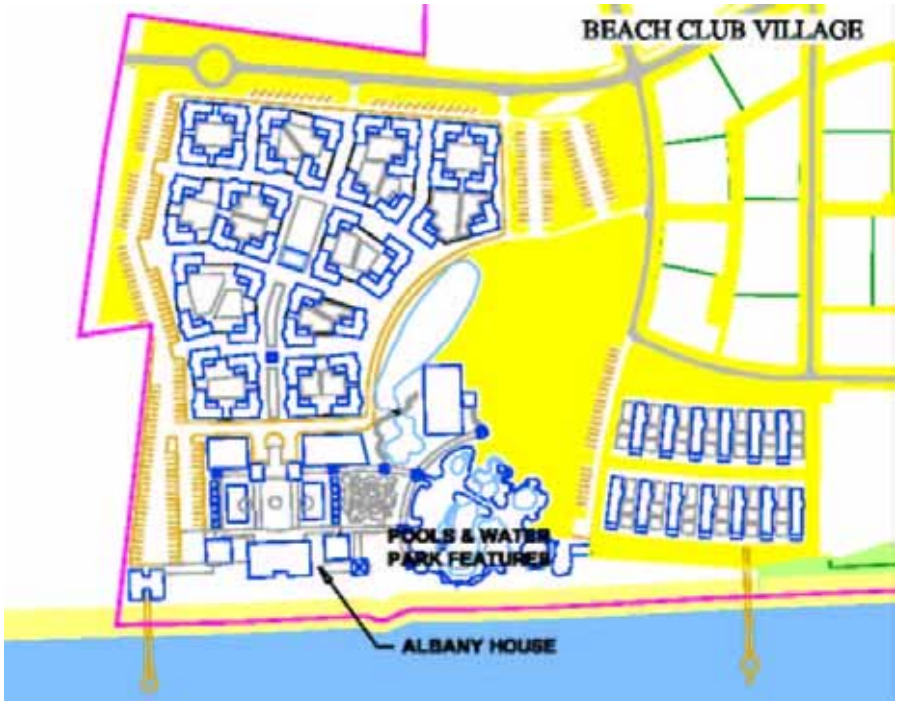


Figure 2-8 Detail of club-house and amenities

Extensive planning efforts have been undertaken by the design firm Duany Plater-Zybek, regarding design and construction of all commercial and residential features of the project. Appendix IV provides details of the design code, which will be reproduced in planned Restrictive Covenants. The codes include standards relating to environmental considerations.

Figure 2-9: Typical Cottage Frontage

Figure 2-10: Typical Cottage Elevation (side view)

2.1 Description of alternatives to the proposed development

It is anticipated that back-up power generation will also be required for the residential units constructed on the single family lots. The same guidelines that are being implemented for the developer directed construction will be required of the contractors and owners of the homes constructed on the single family lots. Exhibit 7 is a specification sheet for Kohler generators. Under standard features and accessories, the exhaust silencer option will be selected. These standards will be reviewed as part of the Architectural Review Committee mandated inDeclaration of Restrictive Convents that govern the Albany project.

With the increased popularity of The Bahamas as a destination for international tourists and a number of similarly high-end projects in operation or being developed, (for example Old Fort Bay, Atlantis on Paradise Island, Winding Bay on Great Abaco, Bakers Bay on Guana Cay and Emerald Bay on Great Exuma, etc.), this project is in line with current themes to encourage visitation and investment in the country.

The property is currently split by South West Bay Road into two parcels, both of which have been previously impacted by land clearing activities. The southern parcel (approximately 72 acres) is the Albany House property that is currently utilized as a vacation residence. The northern parcel (approximately 500 acres) contains the abandoned waterfields owned by the New Providence Development Company.

The no-action alternative is described in Section 2.2. Other options to reduce the size or potential impacts of the project would include elimination of one or several major components of the project, namely the golf course, marina or home sites. Removing any of these fundamental parts would render the project unfeasible as the caliber of customers the project plans to attract will turn to other venues where dual recreation and residential needs can be met.

Within the parameters specified, project owners have made best effort to include green-space and natural areas. Earlier plans included greater acreage of lakes, designed to add a waterfront feel to residences in the northern section of the project. Earlier plans also contemplated clearing the buffer areas between golf course holes and replanting those areas. Current plans call for enhanced buffers in those areas. Eliminating these two previously contemplated features reduces the impact area by approximately 90 acres, providing increased biodiversity and lessening impacts to preserve areas. A final version has eliminated approximately 100 of the smaller home sites to incorporate an equestrian center with fourteen large five acre lots, surrounding stables and a horse riding rink in the northwest quadrant of the site. Clearing guidelines are such that in the region of 50% of each lot will be either retained or planted natural vegetation. Replacing 100 of the smaller 0.16-acre lots, with the larger equestrian home sites adds approximately 27 acres of green space. The plans are shown overleaf for comparison.

Ammenities

Equestrian Center

The equestrian centre is presently in the conceptual design phase and is not targeted for construction until 2nd Quarter 2009. A detailed design and consultation process required to meet Government approvals will probably begin in June 2008.

Based upon anticipated demand for this facility we envisage that a 10 stall barn will be constructed that will initially expect to purchase three horses for use by residents and guests. We aim to provide basic riding instruction in Western, English and Dressage disciplines. These horses will primarily reside in the stables but will be periodically turned out into fenced paddocks to graze and exercise. The paddock areas will be approximately 10 acres, giving at full capacity, 1 acre per horse. Service and access roads will be provided for within the overall facility which will meet the necessary Government requirements. If additional services were required we would look to utilize expertise available within the US. Potable water will be supplied to the equestrian centre by Water & Sewerage Corp. or New Providence Development Companies water franchise. We would estimate that this amenity's demand would not exceed 10,000 gallons per month. The overall waste management plan includes for at least twice daily cleaning out of stalls. Also, as part of our Golf Course maintenance plan we have included an area within our service compound for composting equestrian waste. Within the detailed design of the barn we envisage incorporating an automatic overhead mist system that will control insects and odor.

This small scale enterprise does not entail any significant negative environmental impact. Permeable groundcover will continue to allow natural attenuation of rainfall. Air quality in the existing condition is such that no serious potential for degradation attributable to fugitive emissions is likely. Modern design and incorporation of native landscaping will create an aesthetically pleasing facility aimed at introducing users to the natural environment of The Bahamas in a unique manner.

Summary of research into veterinary services and animal health/maintenance

Although we are still in the preliminary stages of development for the Equestrian Center at Albany, the future need for proper veterinary care is clear. Through the course of our research, we interviewed several Bahamian private stable owners, as well as the manager of a public Bahamian stable. From these interviews, we have become familiar with the demands as well as the availability of equine veterinary care on the island of New Providence.

There will be three basic categories of equine health care needs; routine care, emergency care and special services. Routine care, such as yearly vaccinations and minor first aid, are most likely to be provided by an on-island veterinarian. Certain Bahamian veterinarians, although they are not specifically

equine veterinarians, are customarily used by the people on New Providence for the routine care of their horses. These Bahamian veterinarians are quite familiar with equine health, and are also called upon when an emergency situation arises. Occasionally special services are required, such as X-rays or blood work for traveling horses. These services are typically provided by an American equine veterinarian, usually from Miami or West Palm Beach, Florida. These vets are flown in as needed, and acquire a temporary work permit for The Bahamas. American veterinarians may also be utilized in a special emergency situation.

Overall, caring for the health of equines in an island environment is not unique to The Bahamas and Caribbean. After researching the Bahamian residents' experiences and current on and off island resources, we feel confident that Albany will be able to acquire adequate service for the future equine health needs.

Water Park

Currently the water park at Albany is in the conceptual design phase. It should be clarified that this feature is simply an elaborate fresh water pool complex comprising of 2 slides and waterfall features. At this stage we envisage the elaborate swimming pool set-up having a natural rock look and blending in as far as possible with the surrounding environment. The park should have a low visual impact and compliment the surrounding natural vegetation and buildings. We anticipate the park occupying an area of approximately two acres, which includes the pool, decks, rock formations, cabanas and service areas.

The water used in the park will be fresh water supplied by New Providence Development Company Ltd through their water franchise. A closed system will be used to mitigate water leaching out of the system. The water will be disinfected with solid chlorine tablets and introduced into the water bodies via automatic feeders as with any normal swimming pool used by multiple people.

The equipment room will be housed within an artificial rock formation that will also be used to create the elevation needed for the two slides into the pool. Industry accepted filtration methods will be employed along with proper pump sizing to maintain water quality.

The water chemicals required for the park will be stored independently from the equipment room. This secure storage will be properly ventilated and adhere to all of the relevant industry and manufacturers requirements for storage of pool chemicals. Some of the typical chemicals that are likely to be stored to maintain a 2 week supply are: Tri-chloro-s-triazinetrione, calcium hypochlorite, muriatic acid and soda ash.

Figure 2-11: Original Site Plan

Figure 2-12: Interim Site Plan

Figure 2-13: Final Site Plan

2.2 Specify "no action" alternative for comparison

The no-action alternative entails the continued use of Albany House as a residence and the +/- 500 acre northern parcel remain in the current condition. The societal benefits the project entails would not be realized and continued, chronic degradation of habitats through the invasion of exotic plants and loss of native biodiversity would occur. As this northern parcel is privately owned by the New Providence Development Company and currently is unused, future plans will probably entail development of the piece.

2.3 Specify any additional alternatives that are being considered

No alternative locations or site plans are under consideration at this time. The previously impacted nature of the site, coupled with the suitability for marina development, adds strength to the case for the plan as presented herein.

CHAPTER 3: AREA AND BOUNDARIES OF THE DEVELOPMENT

3.0 Location of site

The 570-acre property is located on the southwestern shoreline of the island of New Providence, The Bahamas, approximately fifteen miles from the capital Nassau on a shallow embayment known as West Bay. New Providence, at approximately 80 square miles, is located in the north central Bahamas, roughly 150 miles from Miami, Florida. The Bahamas is an island archipelago with over 700 islands, cays and rocky outcroppings comprising a total territorial area of approximately 100,000 square miles with a landmass of 5,792 square miles (GEO, Bahamas, 2005). Much of the country consists of shallow carbonate banks, less than 5m in depth, separated by deep ocean troughs. New Providence is bordered by two such features, the Tongue of the Ocean to the west and northeast Providence Channel to the north, both reaching depths of over 6,000'.

A public thoroughfare, South West Bay Road, bisects the property with the Albany House and grounds to the south and the wellfields, used by the New Providence Development Company, to the north.

Figure 3-1: *Map of the Commonwealth of the Bahamas showing the island of New Providence*. (Source: http://www.infoplease.com/atlas/country/bahamas.htmlhttp://www.infoplease.com/atlas/country/bahamas.html)

3.1 Boundaries of site

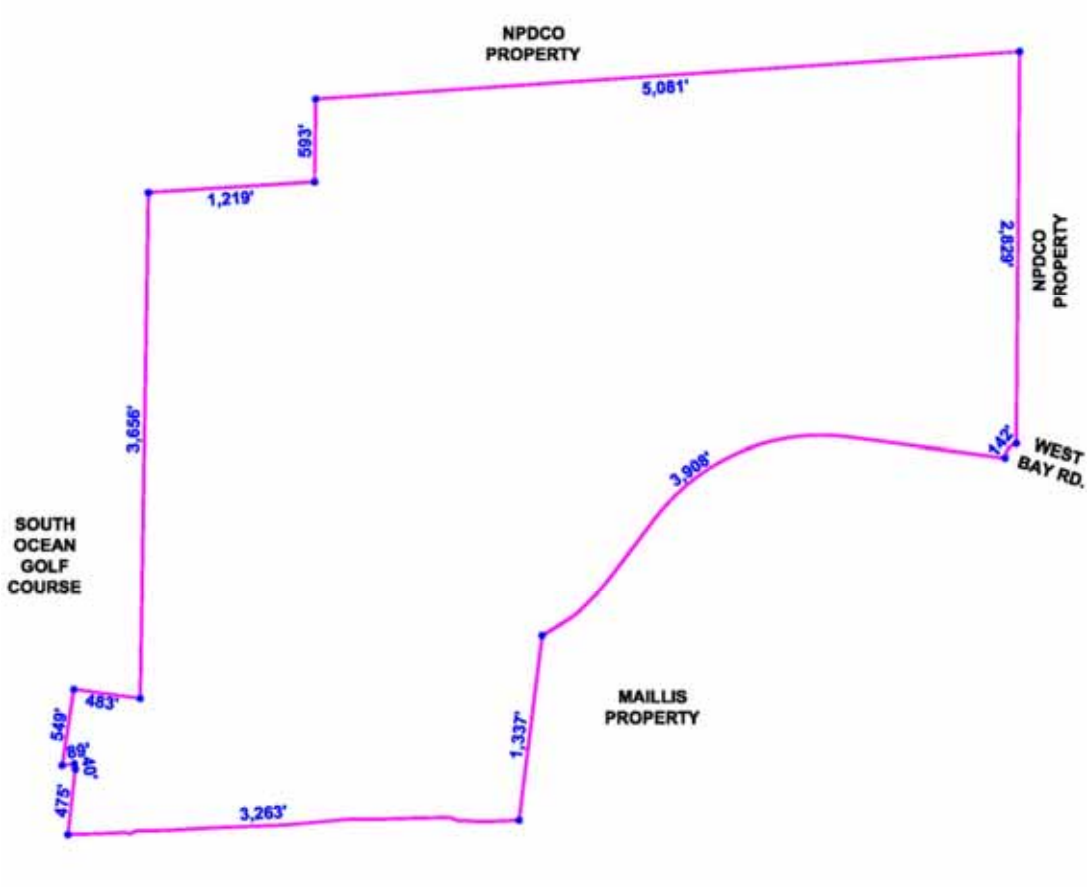


Figure 3-2: Property Boundaries

Property boundaries are defined and quantified as follows:

Northern: Approximately 6,300 lineal feet of lands owned by the New Providence Development Company. The property line is demarcated by a utility right of way with an unpaved access road and overhead electricity lines supplying power from Clifton to the southern part of New Providence.

Western: South of South West Bay Road, approximately 475 lineal feet, undeveloped land owned by the South Ocean Hotel and Golf Club, North of West Bay Road, approximately 4,200 lineal feet, various private single family homes on South Ocean Road.

Eastern: South of South West Bay Road, approximately 1,337 lineal feet, adjacent to the Maillis residence and farm, north of South West Bay Road, approximately 2,829 lineal feet along well-field roads owned by the New Providence Development Company

Southern: Approximately 3,262 lineal feet - the shoreline.

3.2 Area of influence

Given the nature of the proposed development, which will include a world-class golf course, marina and elite residential community, the project is expected to have widespread economic effects. By adding to the tax base, this will have country-wide ramifications. In environmental terms, impacts are primarily localized to the immediate environs.

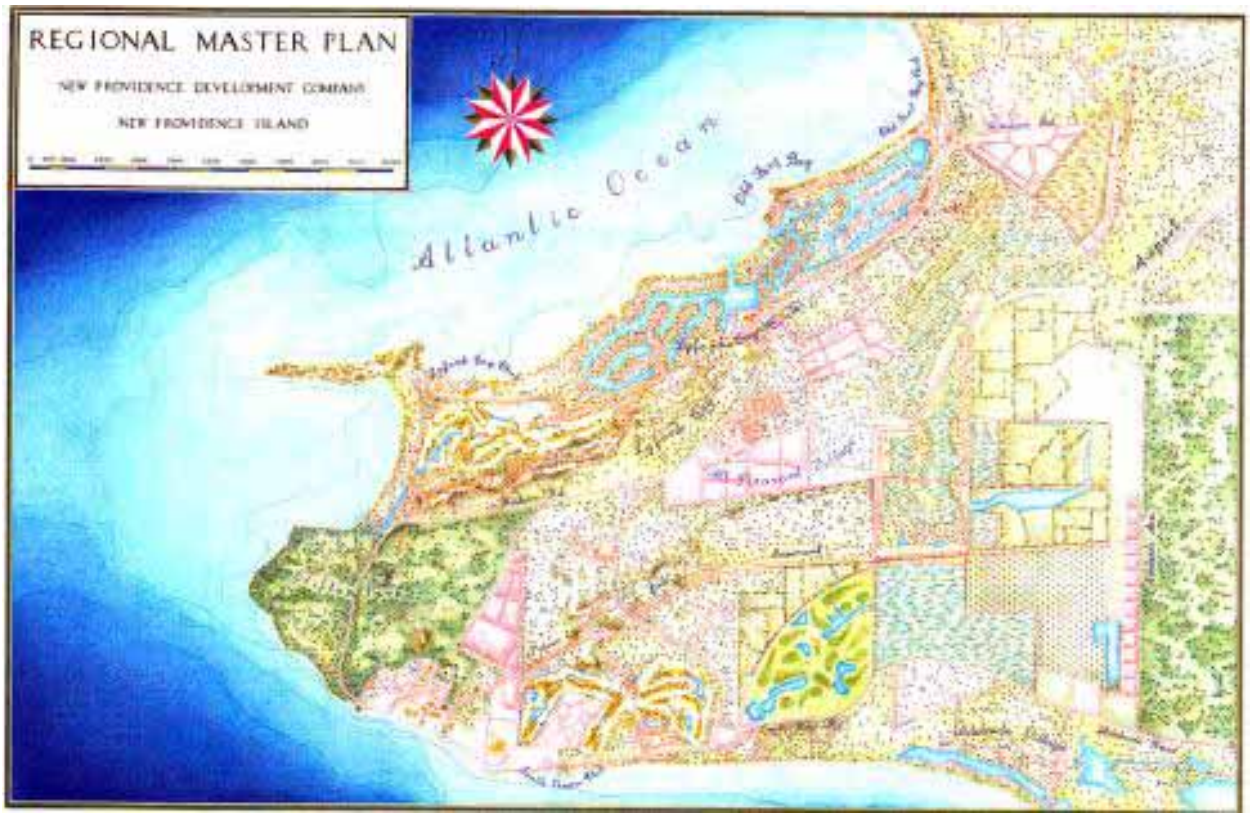


Figure 3-3: Regional Master Plan for western New Providence, provided by DPZ, 2005

CHAPTER 4: BASELINE DESCRIPTION OF THE DEVELOPMENT SITE

PHYSICAL ASPECTS

4.0 Climate, including major events

The Bahama islands stretch for over 700 miles, covering a marine area of over 5,000 square miles with a land mass of 2,300 square miles. Lying within the tropical and sub-tropical climatic belts, weather systems are dominated by the influence of the trade winds and the surrounding ocean. Similar to tropical latitudes, two seasons, wet (summer) and dry (winter) are experienced. Typical rainfall and temperature data is provided in Table 2. Weather records near the site are available with a weather station at the nearby airport regularly monitored and data reported in the Bahamas Journal of Science.

During the summer months, the approximate center of the trade wind belt shifts to the north so that The Bahamas lies closer to its southern border and almost constant, moisture-laden breezes blow from the east or southeast. In winter, the trades shift southwards and winds are less constant. Weather is then more influenced by fronts advancing from the North American continent, sometimes up to twice a week, bringing cooler conditions although temperatures never reach freezing, being moderated by the surrounding waters. Cold fronts are typically preceded by winds from the southwest, which clock to the west then northwest as the front passes with strong winds (20-25 knots) and cooler air. In general terms, winds are predominantly southeast during the summer and northeast during the winter.

The hurricane season lasts from June 1st to December 1st although The Bahamas is north of the path of most Atlantic hurricanes and east of those of the south Caribbean Sea and Gulf of Mexico. Nevertheless, storm frequency is on average every 3.5 years. Recent major events which have affected the northern Bahamas and New Providence include: Hurricanes Floyd (1999) and Michelle (2004). Anticipating storm events and incorporating measures to protect life and structures is an important part of any new development in the country.

Table 4-1: Average Climatic Data for the Bahamas

Month	Max	Min	Hum	Wind	Rain "
Jan	77.3°	62.1°	78%	8.0	1.86
Feb	77.5°	62.5°	78%	8.6	1.59
Mar	79.7°	63.8°	76%	8.9	1.57
April	81.8°	66.2°	74%	8.3	2.12
May	84.6°	69.8°	77%	7.9	4.58
Jun	87.3°	73.3°	79%	7.2	9.17
July	89.1°	74.7°	77%	7.1	6.21
Aug	89.3°	74.8°	79%	6.9	8.50
Sep	88.4°	74.4°	81%	6.2	6.75
Oct	85.4°	71.9°	80%	7.4	6.91
Nov	81.8°	68.0°	78%	8.1	2.23
Dec	78.7°	63.8°	78%	7.8	2.04

4.1 Topography, lithography, pedology, surface characteristics, features of note

The land surface of the site gently slopes from an elevation of approximately 12 feet above sea level in the north, to sea level at the shoreline. There are some subtle elongate ridges that are oriented north and south. These "ridges" have a topographic relief of only a few feet and are the remnants of marine oolitic shoals that were deposited during the Pleistocene era. The rock cropping out at land surface throughout much of the site is the Lucayan Limestone, a Pleistocene-age geologic unit.

Land surface is rough and pockmarked by minor karst features (an irregular limestone surface with small sinks, holes, cavities, etc.), which typify surface landform throughout The Bahamas. There is little or no developed soil and the relatively hard rock at the surface is a calcrete with a very irregularly nature. Vegetation commonly grows in slight depressions within the landscape. These features are all small in size with no sinkholes greater than 3 feet in diameter and a couple of feet deep were observed on-site. Where these features underlie a proposed building pad they may be filled and compacted, but it is not possible to accurately estimate fill requirements nor provide a meaningful representation of this activity as the work refers to normal building activities and very small solution pits. Any subterranean karst features found during construction will be similarly excavated, filled and compacted prior to any construction. These are not significant karst features in the sense of blue holes or large sink holes that might support a unique flora or fauna.

Figure 4-1: Typical landform showing limestone rubble and boulders

The land surface has been altered to a viable degree by the activities of man. A series of trenches (waterfields) were cut into the surficial aquifer in essentially north-south orientations. These trenches are used for the extraction of freshwater from the lens underlying the site. There are some access roads cut across the area and some limestone has been extracted for use as fill.

4.2 Hydrology and hydrogeology, water resources, surface waters, drainage, flood-prone areas

Planning has included extensive study of the geology and hydrologic impacts of the proposed project. Results of this work are presented in entirety in Appendix III and the attached Addendum I to Appendix III.

Surface waters and drainage

There are no natural surface-water bodies on the site. A man-made lake occurs in the extreme southeast part of the property near the shoreline. The man-made lake is not directly connected to tidal water. Rainfall occurring on the property drains into the subsurface on most occasions, because there are no natural stream channels. A significant amount of the stormwater is captured by the waterfields trenches. In extreme rainfall events, some water can run off to the south toward the shoreline.

Hydrology and hydrogeology

This area of New Providence Island receives about 54 inches per year of rainfall. Most of the rainfall evaporates or transpires back into the atmosphere leaving between 8 and 12 inches per year of recharge to the surficial aquifer. The rainfall pattern is seasonal in nature with most rainfall occurring during the wet season from June to October. Also, there are extreme differences in annual rainfall accumulation from a high of 76 inches to a low of 36 inches. In a 1 in 10-year drought, the rainfall is about 39 inches.

The geology beneath the site consists of carbonate sediments from the land surface to depths exceeding 20,000 feet. Only the upper 600 feet of sediment is of significance to activities at land surface. A Miocene-age dolomite occurs from 600 feet up to about 450 feet below surface. This unit is cavernous and has a very high permeability. It is used for the disposal of liquid waste on the island at several locations. An unnamed Pliocene-age dolomite occurs from about 450 to 140 feet below surface. This unit can be subdivided into two units, which are a lower dense dolomite from 450 to 300 feet below surface and a cavernous dolomite from 300 to 140 feet below surface. The lower dolomite provides some degree of separation between the cavernous Miocene dolomite and the upper Pliocene dolomite. Wastewater injection wells constructed on the island are cased to the base of the lower Pliocene dolomite. The upper Pliocene dolomite is commonly used as a source of water for seawater reverse osmosis water treatment facilities. The Pleistocene-age Lucayan Limestone occurs from about 140 feet below surface to land surface beneath the site. This unit contains seawater at its base and a freshwater lens near surface.

The Lucayan Limestone aquifer is the only source of freshwater beneath the site. The thickness of the freshwater lens on the site ranges from zero to about 40 feet. The thickness of the lens varies seasonally with the greatest thickness occurring in summer months during the wet season.

On-site hydrogeologic investigations have shown that the hydraulic conductivity of the Lucayan Limestone aquifer ranges from about 3 feet/day near the land surface, to about 10 feet/day at a depth of about 32 feet, to over 100 feet/day at depths greater than 60 feet. This configuration of hydraulic conductivity controls the geometry of the freshwater lens on the site.

4.3 Air quality

No in-situ measurements of current air quality were made. The site is located some 15 miles southwest of Nassau in a rural residential area of New Providence. The power station at Clifton is located approximately 4 miles to the west but with winds predominantly from the east, the facility has minimal influence on the site's air quality. Traffic on South West Bay Road is light but constant, comprising mostly local residents in private vehicles and public transport from and to downtown Nassau, few large businesses are located in the immediate area with the exception of the power plant and brewery at Clifton. The Bahamas as a whole exhibits good air quality with its low-lying topography and almost constant ocean breezes. On occasion, wind borne Saharan dusts are deposited and suspected of causing adverse effects on coral reefs as well as affecting soil composition in some of the outlying Family Islands, for example the red loams of Eleuthera have been historically used for pineapple farming.

4.4 Noise pollution

In the existing condition, activities or factors, which affect noise levels, include the light vehicular traffic described above and aircraft landing and taking off from the nearby international airport.

BIOLOGICAL ASPECTS

4.5 Terrestrial habitats, including forests and scrub, mangroves etc.

4.5.1 Methodology

Fieldwork was carried out in late December, early January 2004-2005, and in July 2005. Vehicular access throughout the site was possible due to the existence of parallel wellfield trenches and well-maintained paths through the Albany House grounds. Please also refer to the photomontage presented as figure 4-3 to visualize existing conditions on the site. Aerial photographs were consulted to determine location and identify landscape features that were then further accessed on foot. A series of 37 data points was established and at each station work included;

- Characterization of habitat type.
- Determination of percent cover of canopy, midstory and groundcover vegetation.
- Identification of exotic or rare species and other pertinent ecological issues.
- Wildlife observations.
- Listing of plants species observed.
- Digital photography to illustrate each data point.

Full results of the vegetative survey, with graphs showing species composition at each data point, photographs and common species inventory is provided in Appendix V, together with a complete floristic species list in Appendix VI. A total of ten (10) distinct habitat assemblages were identified and are described below.

Mapping and scaling of habitat types was made possible through the use of aerial photographs combined with groundtruthing. Acreages given are approximate and provided to enable quantification of impacts associated with the proposed development. AutoCad Version 4 was used for mapping and calculation purposes. Descriptive classifications are provided based on Areces-Mallea *et al*. (1999), while numbering of the different habitat types allows quick reference to accompanying habitat maps.

Figure 4-2: *Habitat Map with Data Points*
(See Appendix I Sheet 1.3)

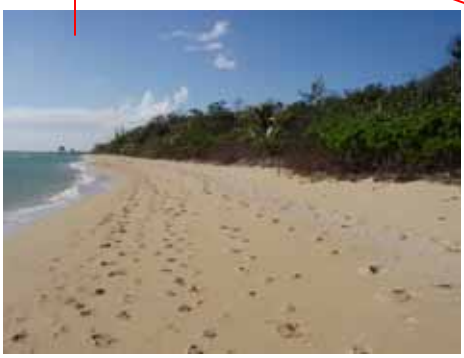
Wellfield trench

Existing access roads

Pine habitat

Figure 4.3:
Photo Montage

Existing pier



Albany beach

Existing marina basin

4.5.2 Habitat Descriptions and Survey Results

1. Pine

Order		Tree dominated
Class	II	Woodland
Subclass	II.A	Evergreen woodland
Group	II.A.3	Tropical or subtropical needle-leaved evergreen woodland
Subgroup	II.A.3.N	Natural/Semi-natural
Formations	II.A.3.N.a	Tropical or subtropical needle-leaved evergreen woodland e.g. Pine woodland with under story dominated by a variety of dry broad-leaved evergreen shrubs

Greatest in areal extent (231.3 acres), making up much of the northern section of the site is the Caribbean Pine community. Pinelands are found on New Providence, Andros, Grand Bahama and Abaco, with disjunct populations in the Turks and Caicos but on no other islands of the Bahamas. At one time there may have been pine forests in the Berry Islands (Myers et al, 2004). Taking the country as a whole, pine forests make up 23% of all terrestrial communities with 55% of those found on Andros (Myers et al, 2004). The Caribbean Pine (*Pinus caribea var. bahamensis*) is endemic to the Bahamas (BEST, 2005), varieties are found in Honduras and the Caribbean and the Florida equivalent is the Slash pine, *Pinus elliotti.* It reaches approximately 80-90' in height

Historically the commercial value of the tree, which is fast growing and rich in resins and turpentines (used for construction and paper pulp) resulted in extensive logging activities such that most pinelands now observed are second growth habitats. Pine was used first for construction purposes and then in the pulp-mill industry. Logging ceased after 1975 and forests were left to regenerate naturally with about 12 trees per acre left as seed sources (Sealey, 2005). The resource retains some commercial value for the country, for lumber, pulp, fuel, seeds, resin and charcoal (Sealey (2005). Correll & Correll (1982) recognize wet and dry pine communities and provide characteristic species assemblages for each. Based on their work, the pinelands on the Albany site are identified as dry pine communities with a canopy of Caribbean pine, *Pinus caribea var. bahamensis,* midstory of Poisonwood, *Metopium toxiferum* and Thatch palm, *Thrinax morrissi* and mixed groundcovers including Bracken fern, *Pteridium aquilinum,* and Golden Beach Creeper, *Ernodea littoralis*.

Pine forests are fire dependant communities and without periodic burns, midstory species shade out pine seedlings and the community type eventually changes to a broadleaf coppice. Plants and animals are adapted to frequent stochastic fires, ignited by lightning or humans. Adaptations of the Caribbean pine include the thick bark of the pine tree, needles arranged in clusters, branches oriented towards the top of

the tree and outspread crowns that allow heat to dissipate, as well as the resins and turpentines of the wood and bark which allow heat to travel up the tree without damaging the interior heartwood. Associated plants and shrubs are quick to re-sprout and fires allow pine regeneration in an open, and rich mineral substrate which has been exposed by the fire. Fire also stimulates seed germination in the pine and in many plant species.

Figure 4-4: Pineland with overgrown mid-story resulting from absence of a regular fire regime.

Evidence of previous burns was observed in some stations in the central part of the site (data points 9 and 10). In the eastern stations, stages of ecological succession to mixed broadleaf coppice community are well underway. Previous logging and wellfield use, as well as the absence of regular burns, has negatively impacted the habitat fragmentation and has drawn down the water table.

Figure 4-5: Evidence of past burns in central portions of the site.

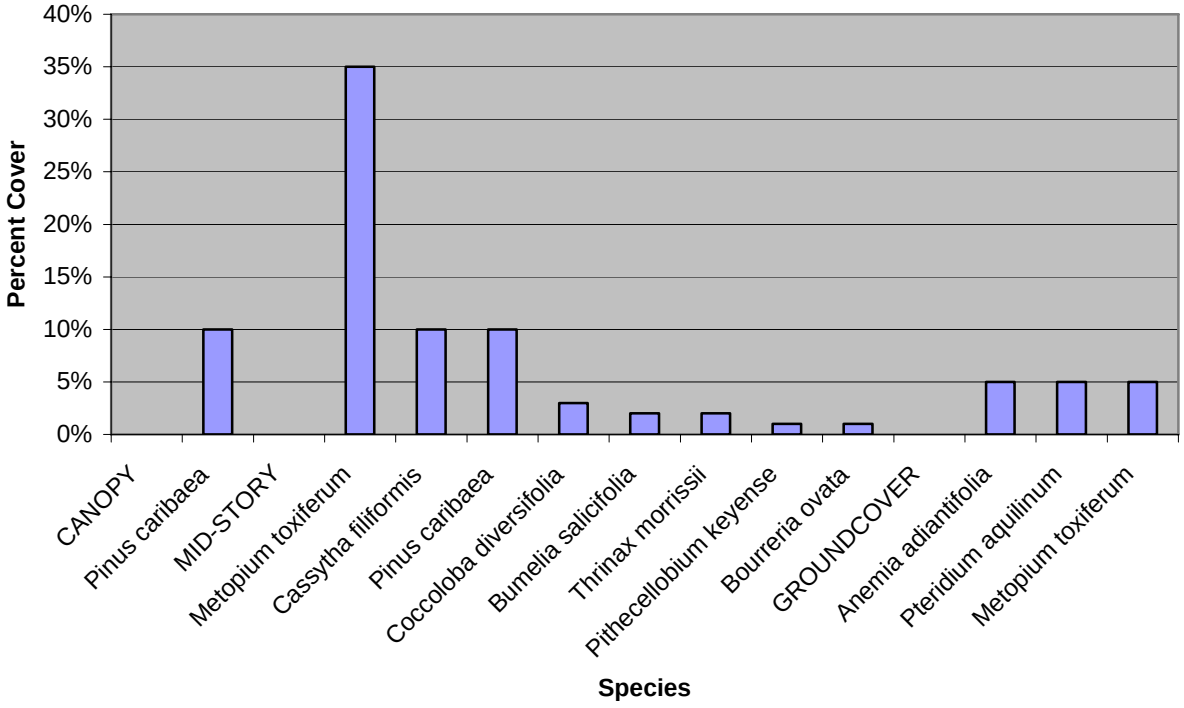


Figure 4-6: Graph showing typical species composition in pine habitat, Data Point 5.

1a. Pine - Open Canopy

Located in the northwestern portion, 10.3 acres of open pineland was noted with similar species composition but reduced percent cover of canopy trees.

2. Pine / Palm

Order		Tree dominated
Class	II	Woodland
Subclass	II.A	Evergreen woodland
Group	II.A.3	Tropical or subtropical needle-leaved evergreen woodland
Subgroup	II.A.3.N	Natural/Semi-natural
Formations	II.A.3.N.d	Saturated tropical or subtropical needle-leaved evergreen woodland e.g. Pine rock lands with under stories dominated by palms

This delineation was used where Thatch palms, *Thrinax morissii*, were present as a dominant canopy or midstory species along with Caribbean pine, *P.caribea*. Midstory and groundcover species were very similar to the pine and open pine habitat types but *T. morrissii*, in some areas were abundant. Estimates of 200 palms per acre were made. This is an attractive landscaping plant, which should be retained where possible or transplanted for use in future development plans. Total acreage is estimated at 49.6 acres.

Figure 4-7: Pine-palm habitat

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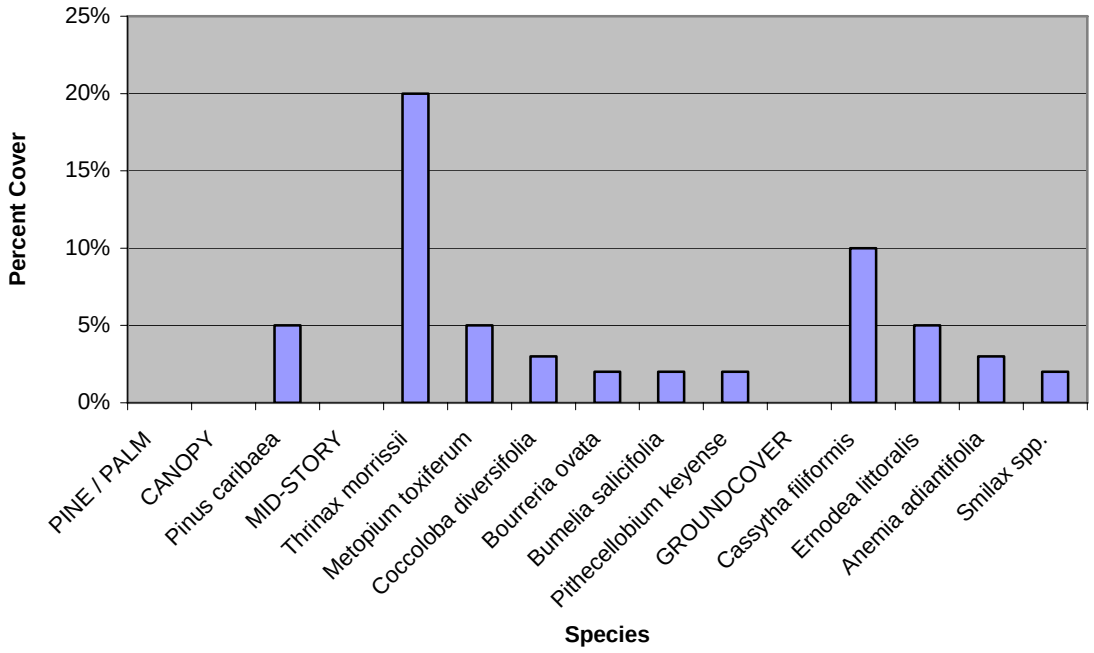


Figure 4-8: Graph showing typical species composition in pine-palm habitat, Data Point 7

3. Coppice Ridge

Order		Tree dominated
Class	I	Closed Tree Canopy
Subclass	I.C	Mixed evergreen-deciduous forest
Group	I.C.1	Tropical or subtropical semi-deciduous forest
Subgroup	I.C.1.N	Natural/Semi-natural
Formations	I.A.7.C.b	Lowland semi-deciduous forests
		e.g. Coppice communities occurring in dry areas

The broadleaf coppice community is recognized as providing the greatest terrestrial biodiversity of any upland habitat in the Bahamas. While most of the hardwoods (for example Mastic, Mahogany, Ironwood and Horseflesh) were removed for lumber and ship-building purposes, one commercial use remains; that of stripping the bark of the Cascarilla tree (*Croton elutaria*) for oils used to flavor Martini vermouth, perfumes and cigarettes, a practice which continues today only on Cat Island (Sealey, 2005).

The ridge feature (totaling 11.5 acres) extends from the western property boundary into the central part of the site. This feature was noted on aerial photographs and topographic data confirmed the presence of a higher ridge with elevations above sea level of approximately 10 feet. In the low lying islands of the Bahamas, elevation change of just a few inches can promote a completely different habitat type, as

observed here. Pines were absent and a mixed broadleaf coppice habitat comprising Poisonwood, *Metopium toxiferum*, Pigeon plum, *Coccoloba diversifolia*, Cassada wood, *Bumelia salicifolia*, Thatch palm, *Thrinax morissii*, Gumbo limbo, *Bursera simaruba*, Five finger, *Tabebuia bahamensis*, Rams horn, *Pithecellobium keyense*, Wild coffee *Psychotria ligustrifolia,* and Wild bamboo, *Lasiascis divaricata* was noted. Some of the species have landscape value and epiphytic plants included several species of *Tilandsia* (Wild pine).

Figure 4-9: Coppice ridge habitat in the western section of the site

Figure 4-10: Broadleaf coppice habitat interior

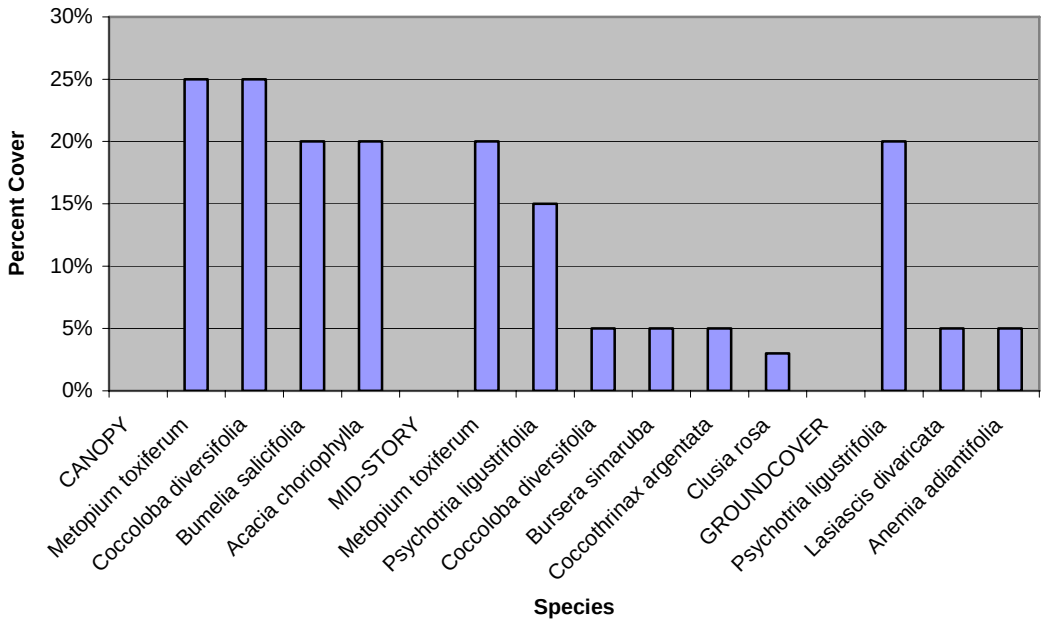


Figure 4-11: Graph showing typical species composition in dry coppice ridge habitat, Data Point 12

4. Coppice

Order		Tree dominated
Class	I	Closed Tree Canopy
Subclass	I.C	Mixed evergreen-deciduous forest
Group	I.C.1	Tropical or subtropical semi-deciduous forest
Subgroup	I.C.1.N	Natural/Semi-natural
Formations	I.A.7.C.b	Lowland semi-deciduous forests
		e.g. Coppice communities occurring in dry areas

With a species assemblage similar to the ridge feature, this habitat makes up a good proportion of the Albany House grounds at 28.4 acres. It is a mixed assemblage of broadleaf plants with a typical canopy of Pigeon plum, *Coccoloba diversifolia*, Locust berry, *Byrsonima lucida,* Darling plum*, Reynosia septentrionalis,* Five finger, *Tabebuia bahamensis* and Rams horn, *Pithecellobium keyense*. Mahogany, *Swietenia mahogani*, was observed in several stations and other species with landscape value were also noted.

Figure 4-12: Typical mixed coppice habitat.

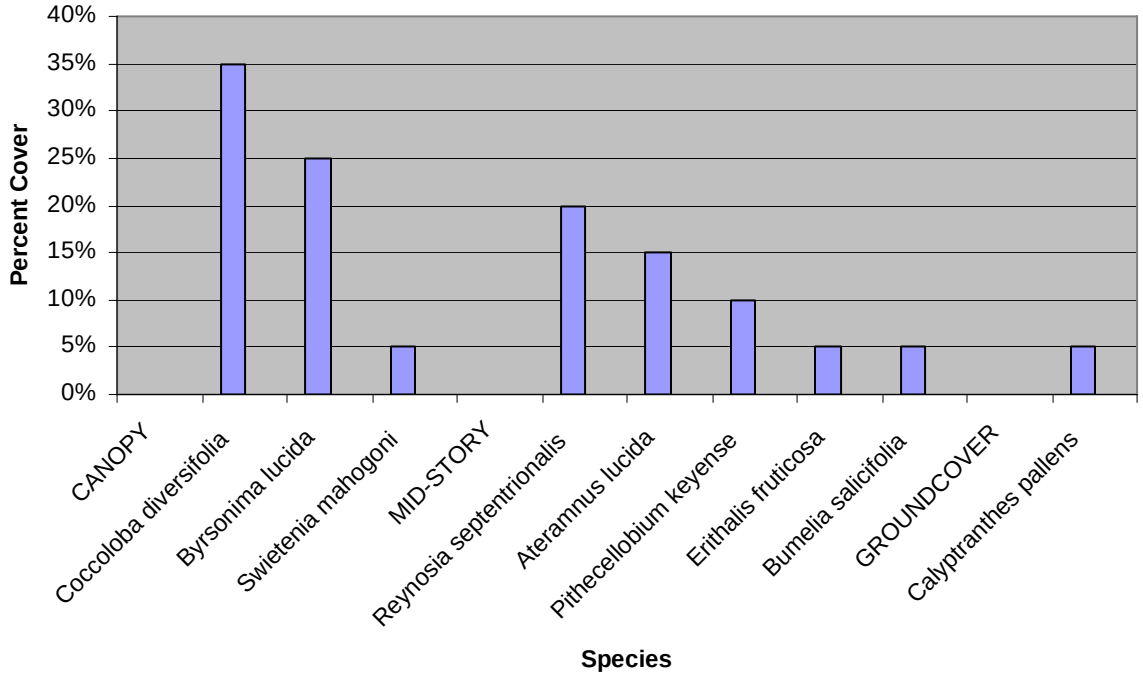


Figure 4-13: Graph showing typical species composition in coppice habitat.

5. Disturbed - Casuarina

Order		Tree dominated
Class	I	Closed Tree Canopy
Subclass	I.A	Evergreen Forest
Group	I.A.7	Tropical or subtropical needle-leaved or needle stemmed evergreen forest
Subgroup	I.A.7.C	Planted / Cultivated
Formations	I.A.7.C.b	Casuarina forest plantation*
		e.g. Casuarina planted, or invasions of Casuarina along shorelines

The Australian pine, *Casuarina equisetifolia*, is an exotic invasive which is prevalent in coastal and disturbed areas throughout the tropics. Casuarinas out-compete native vegetation through the shade they create and with a dense carpet of needles which prevent the establishment of groundcovers by producing chemicals which further inhibit native species colonization in the area. Monoculture areas (16.9 acres) of Casuarinas were noted in parts of the Albany grounds. In some cases, Casuarinas were interspersed with the Cajeput or Paperbark tree, *Melaleuca quinquenerva*, another exotic invasive species. Casuarina was noted throughout the property, particularly in previously disturbed areas. As part of the development plan, it is recommended that these and all other invasive species be removed.

Figure 4-14: Disturbed Casuarina habitat in the vicinity of the proposed marina

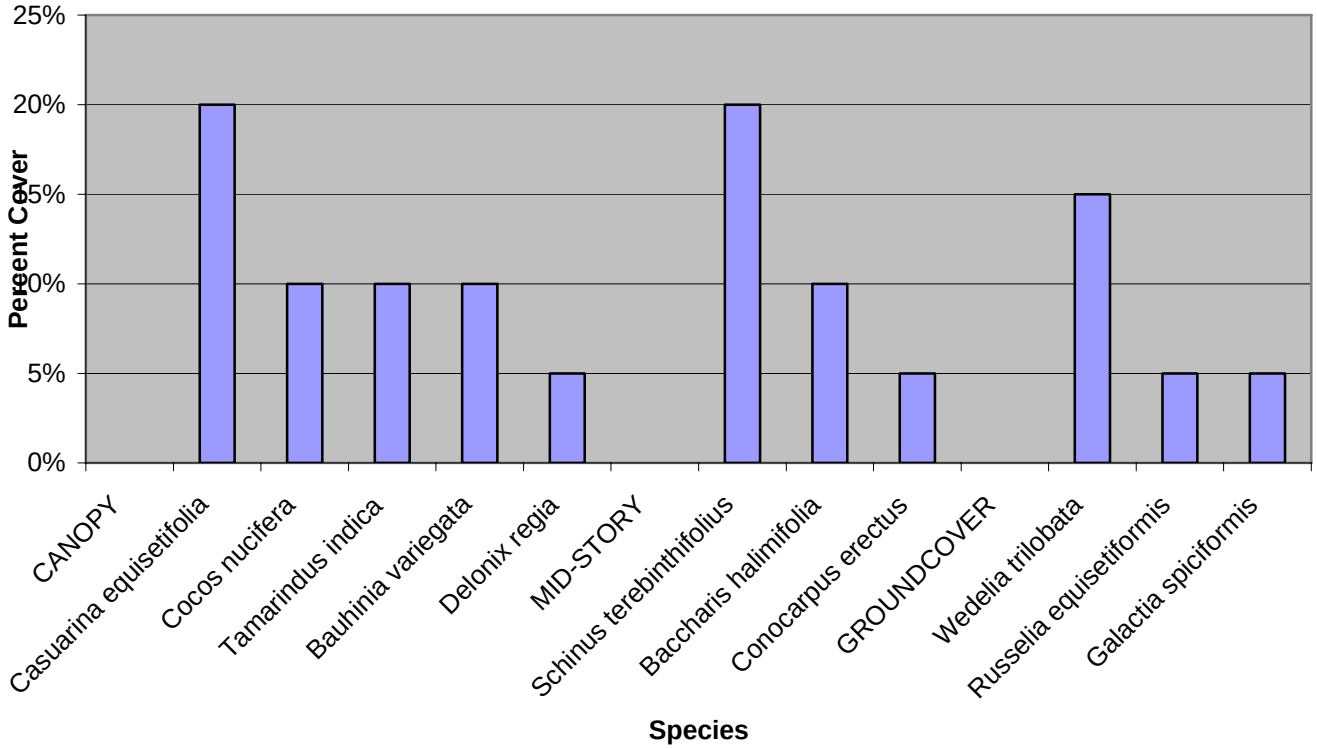


Figure 4-15: Graph showing typical species composition in disturbed Casuarina dominated habitat, Data Point 19

6. Disturbed - Mixed Weeds

This delineation was given to areas (14.3 acres) that exhibited a mix of exotic species including Casuarina, *C. littorea*, Jumbey, *Leucaena leucocephala,* Love vine, *Cassytha filiformis*, and planted species.

Figure 4-16: Nuisance plants

7. Disturbed - Pine

What appears as bare land in aerial photographs of the northeastern portion of the property is characterized as disturbed pineland. Information derived from employees of the New Providence Development Company (NPDC) and confirmed by field observations and topographic data, suggest that this area was scraped down by NPDC's rock plant operation for aggregate and gravel production. Gravel is visible on the surface of the ground, as are bite marks from excavation equipment. Islands of natural vegetation remain with species assemblage similar to the Pine community but the bare land has been re-colonized only by patchy and sparse vegetation including Casuarina and significant amounts of Love vine. The total area affected is estimated at 140.4 acres.

Figure 4-17: Disturbed areas in the north part of the property where existing pineland was scraped down for gravel extraction

8. Coastal Strand

Class	III	Shrub Land (scrub)
Subclass	III.A	Evergreen shrubland (scrub)
Group	III.A.1	Tropical and subtropical broad-leaved evergreen shrubland
Subgroup	III.A.1.N	Natural/Semi-natural
Formations	III.A.1.N.a.	Tropical or subtropical broad-leaved evergreen shrubland (includes bamboos and tuft-trees)* e.g. Coastal *Thrinax*/*Coccothrinax* palm dominated or *Cassia lineata* dominated communities on sand substrates

Running along the shoreline of the Albany grounds, 4.7 acres of a narrow but well developed strip of coastal vegetation was delineated. This community transitions landward with broadleaf species of the Dry coppice community. Shoreline upland assemblages are valued for the coastal protection they offer, trapping sand and providing wildlife habitat. Typical species include Bay cedar, *Suriana maritima*, Seven year apple, *Casasia clusiifolia* and Seagrape, *Coccoloba uvifera.* The invasive exotic Beach napauka, *Scaevola taccada*, was observed in this community and can proliferate and out-compete native species including the native Inkberry, *Scaevola plumieri*. This and other observed exotics should be removed.

Figure 4-18: Coastal sand strand habitat

9. Cattail

Class	V	Herbaceous
Subclass	V.A	Perennial graminoid vegetation (grasslands)
Group	V.A.1	Tropical or subtropical grassland
Subgroup	V.A.1.N	Natural/Semi-natural
Formations	V.A.1.N. h	Semi-permanently flooded tropical or subtropical grassland e.g. Marshy areas dominated by Cattail (*Typha domingensis*)

In depressional areas (1.0 acres) within the Albany grounds, areas of Cattails, *Typha domingensis*, with associated Pond apple, *Anonna glabra*, and Cabbage palm, *Sabal palmetto*, were observed. The ground was marshy in this area with sediment/mud depths measured at over 3 feet. These are freshwater wetlands corresponding to low lying areas as shown by topographic data, with elevations of 2' above mean sea level. Wetland areas are typically valued for the habitat, shore protection and aquifer recharge value they represent, but Cattails are viewed as a nuisance species in Florida. If this habitat is conserved as part of development plans, a different mix of native wetland species should be considered.

Figure 4-19: Cattails

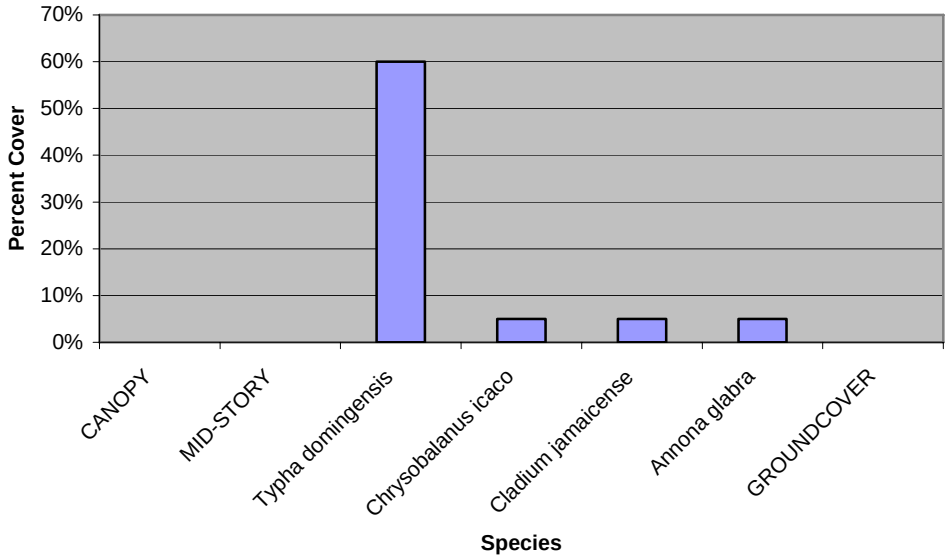


Figure 4-20: Graph showing typical species composition in Cattail dominated habitat, Data Point 29

10. Cabbage Palm

Order		Tree dominated
Class	II	Woodland
Subclass	II.A	Evergreen woodland
Group	II.A.1	Tropical or subtropical broad-leaved woodland
Subgroup	II.A.1.N	Natural/Semi-natural
Formations	II.A.1.N.C	Seasonally flooded/saturated tropical or subtropical broad-leaved Evergreen woodland, e.g. Communities dominated by Sabal palm (*Sabal palmetto*)

Two small areas totaling 2.1 acres within the Albany House grounds were dominated by Cabbage palm, *Sabal palmetto*. These have landscaping value and could be retained or transplanted.

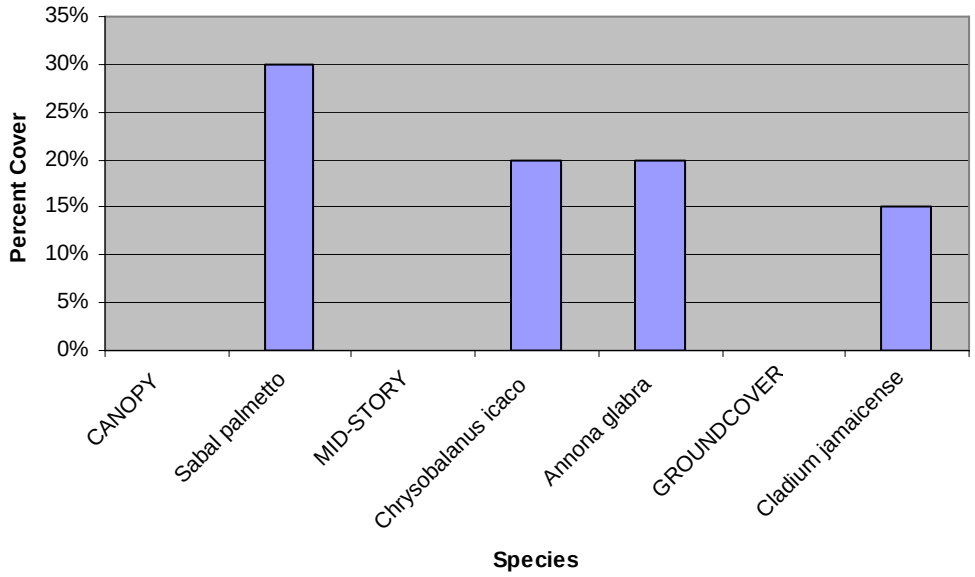


Figure 4-21: Graph showing typical species composition in disturbed Sabal palmetto habitat, Data Point 27

11. Disturbed / Landscaped

Grounds around the existing Albany House are turfed and landscaped with a variety of native and non-native garden species. There are also several ponds and water features with a variety of fresh water aquatic vegetation. Total landscaped area is estimated at 6.5 acres.

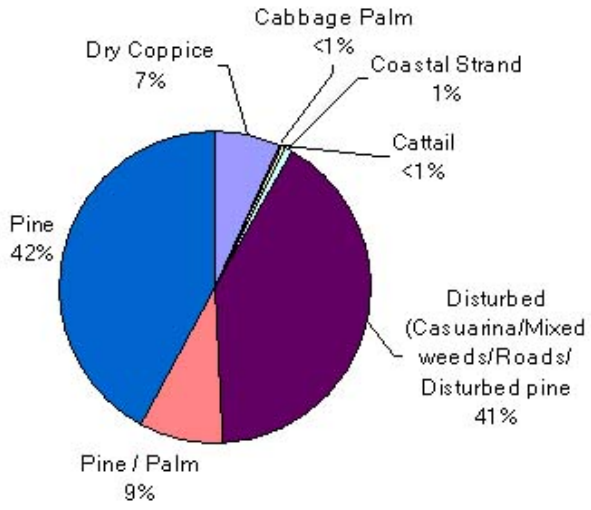
12. Roads

Roads, trails and well field trench features are extensive throughout the property and have been estimated to total 54.8 acres of disturbed land. There is an additional small area (0.4 acres) used as a dumpsite for vegetation and landscape debris within the Albany House grounds.

Table 4.2: Habitat Types and Acreages Summarized (Codes refer to habitat maps and show which areas have been combined per similarity of habitat composition)

HABITAT TYPE	TOTAL ACRES (EXISTING CONDITION)	PERCENTAGE OF TOTAL
(A) (M) Dry Coppice	39.9	6.97 %
(B) (E) Cabbage Palm	2.1	0.36 %
(C) Cattail	1.0	0.17 %
(D) Coastal Strand	4.7	0.82 %
(F) (G) (I) (K) (O) (P) (Q) (R) Disturbed (Casuarina/Mixed weeds/Roads/Disturbed pine	233.3	40.7 %
(H) (J) Pine / Palm	49.6	8.66 %
(L) (N) Pine	241.6	42.2 %
TOTAL	572.2	

Chart 4.1: Habitat Composition



4.6 Caves and blue holes

These features were not observed on the subject site, which exhibits fairly uniform topography with the exception of the ridge feature described on page 43. Cavern features are known to exist in the adjacent Primeval Forest, a protected area northwest of the site. Larger sinkholes and limestone formations were observed in the ridge feature, making it possible that cave features exist that were not observed due to vegetation overgrowth. Hydrogeological surveys found no significant large cavities in the boreholes, which were drilled to depths up to 40 feet (refer to Appendix III).

4.7 Marine habitats, including reefs, beaches, sea-grass beds, etc.

Marine aspects of the project are described in a supplemental report (Appendix II) by Smith Warner International. This work assessed existing resources and included evaluation of the likely effect of dredging, marina and breakwater construction on both the marine resources and on the coastal sand budget in the project area. Consideration of adjacent shorelines, particularly with reference to likely effects of the development, was also made.

4.8 Aquatic habitats, fresh and saline wetlands

Please see page 51, habitat type 9: Cattail Ponds.

4.9 Biodiversity including protected species of animals, birds and plants

Background

The Bahamas ratified the United Nations Convention on Biological Diversity (CBD) on September 9th, 1994. Since becoming a party to the CBD, participation in enabling activities has allowed completion of the National Biodiversity Data Management Assessment in 2004, which resulted in the establishment of the National Clearing-House Mechanism (CHM) for Biodiversity Information and the CHM Website (BEST, 2005)

The Bahamas became a party to the Convention on International Trade of Endangered Species (CITES) on 20th, June 1979. Since then, the government has solidified its commitment to the management of endangered and threatened species through enactment of legislation which restricts trade in such species throughout the Commonwealth of the Bahamas.

Listed endangered wildlife species include the West Indian Tree Duck (*Dendrocynga arborea)* and Loggerhead Turtle (*Caretta caretta)*. Listed threatened species include the Queen Conch (*Strombus gigas*) and Bahama Parrot (*Amazona leucocephala bahamensis*). No listed wildlife species were

observed during the survey period on the subject site. According to unpublished data and observations made by local resident Pericles Maillis (Maillis, pers comm., 2005), Queen conch (*Strombus gigas*) numbers in the West Bay have been reduced significantly due to over-fishing and sea turtle nesting has not been observed on the beach at Albany or at any adjacent beaches in the area.

Invasive Species

An exotic invasive species is defined by the Florida Exotic Pest Plant Council (2003) as occurring outside of its natural range whether by deliberate or accidental introduction, having become naturalized in a new habitat and spreading to colonize other adjacent areas. Native species are those generally considered to have been present at the time of European colonization of the New World, roughly circa 1500.

Spread of invasives is recognized as a growing problem in the Bahamas. Pimental *et al* 2004, showed that in the United States an estimated 50,000 foreign species of plants, animals and microorganisms cause major environmental damage and losses up to $120 billion US per year, and that almost half of the species listed under the Endangered Species Act are at risk, primarily because of exotic species. Controlling this growing problem on unmanaged lands in the Bahamas is an important focus for the Government. The National Invasive Species Strategy for The Bahamas was published by BEST in 2003, and lists species for which eradication or control is recommended. These are listed below and over 50% are present on the Albany site. The previously impacted nature of the property has reduced biodiversity and wildlife value as well as opening the door for invasive plants. All species noted will be eradicated and managed, post-development.

Table 4-3 Species Recommended for Eradication (BEST, 2005)

COMMON NAME	SCIENTIFIC NAME	ON-SITE
Australian pine	*Casuarina glauca*	YES
Paperbark tree	*Melaleuca quinquinervia*	YES
Monkey Tamarind	*Mucuna pruriens*	
Hawaiian seagrape	*Scaevola taccada*	YES
Brazilian Pepper	*Schinus terebinthifolius*	YES
Shiny cowbird	*Molothrus bonariensis*	
Racoon	*Procyon lotor* (for all islands except New Providence and Grand Bahama)	YES

Table 4-4 Species Recommended for Control BEST, 2005)

COMMON NAME	SCIENTIFIC NAME	ON-SITE
Womans tongue	*Albizia lebbeck*	
Coral vine	*Antigonon leptopus*	
Poor mans orchid	*Bauhinia variegata*	YES
Australian pine	*Casuarina equisetifolia*	YES
Poinciana	*Delonix spp.*	YES
Water hyacinth	*Eichhornia crassipes*	
Logwood	*Haematoxylum campeachianum*	
Morning Glory	*Ipomea purpurea*	
Jumbey	*Leucaena glauca*	YES
Bay rum	*Pimenta racemosa*	
Almond	*Prunus amygdalus*	YES
Castor bean	*Ricinus communis*	
African tulip tree	*Spathodea campanulata*	
Schefflera	*Schefflera actinophylla*	YES
Star Jasmine	*Trachelosperumum jasminoides*	
Wedelia	*Wedelia trilobata*	YES
Rock Dove	*Columba livia*	YES
House sparrow	*Passer domesticus*	
Eurasian Collared dove	*Streptopelia decaocta*	
Dogs	*Canis* spp	YES
Cats	*Felis cattus*	YES
Racoon	*Procyon lotor* (for control on New Providence and Grand Bahama	YES

Not nationally earmarked for eradication or control but widely recognized as an invasive species and a nuisance is the rat, *Rattus norvegicus* . They are known to damage infrastructure, consume food meant for human consumption, act as a vector of disease and to eat native birds. Rats were observed on site in addition to the Fire ant, *Wasmannia auropunctatus,* both will be targeted for control.

PLANTS

Of the 1,371 species of plants recorded for the Bahamas in Correll and Correll, (1982), 20 are endemic to the country. Under the Conservation and Protection of the Physical Landscape of The Bahamas (Declaration of Protected Trees) Order, 1997, the following species of trees are protected throughout the Commonwealth of the Bahamas (BEST, 2005)

Table 4-5: Protected Flora in The Bahamas (BEST, 2005) and Observations on the Albany Site, 2005

COMMON NAME	SCIENTIFIC NAME	ON-SITE	PROTECTIVE MEASURES EMPLOYED
Rauwolfia	*Rauvolfia nitida*	Not observed	N/A
Red cedar	*Juniperus barbadensis*	Not observed	N/A
Silk Cotton tree	*Ceiba pentandra*	Not observed	N/A
Horseflesh	*Lysiloma sabicu*	Not observed	N/A
Lignum vitae	*Guaiacum officinale*	Not observed	N/A
Mahogany	*Swietenia mahogoni*	YES	Specimen trees will be retained where possible
Brasiletto	*Caesalpinia bahamensis var. reticulata*	Not observed	N/A
Candlewood	*Gochnatia ilicifolia*	Not observed	N/A
Caribbean Pine	*Pinus caribea var. bahamensis*	YES	Specimen trees will be retained where possible
Beefwood (Blolly)	*Guapira discolor*	YES	Specimen trees will be retained where possible
Black ebony	*Disopyros spp.*	Not observed	N/A

Lee and Carey, (2001) noted a unique record of a butterwort*, Pinguicula pumila,* growing in a third growth pine forest close to the Albany site (close to Coral Harbour Road) in 1998. This is a minute insectivorous plant and the first and only record of the species for New Providence. It is possible that populations exist on the ecologically similar Albany site but authors conclude that it is likely to be found in all the pine islands of the Bahamas.

BIRDS

Approximately 300 species of birds have been recorded in the Bahamas, 109 species breed and are permanent residents while the rest are either vagrants (reported only a few times) or migrating transients, (White 1998). The national bird is the Greater Flamingo, *Phoenicopterus ruber* and three species are endemic to the islands, the Bahama Woodstar (*Calliphlox evalynae evelynae)* Bahama Yellowthroat (*Geothylpis rostrata coryi*), and Bahama Swallow *(Tachycineta cyaneovireo).* The islands are a strategic stop-over or wintering ground for species escaping cold North American winters. Most species are West Indian in origin, a fact related to patterns of glaciation during the last ice age when only a narrow channel separated Cuba and The Bahamas which created a short migration or transport route for most of the flora and fauna found in the islands today.

The Piping Plover (a winter migrant), West Indian Tree Duck (threatened by hunting and found on Andros and Hog Cay, Long Island) and Kirtlands Warbler (for which species The Bahamas are the only known wintering ground) are all species considered vulnerable by Birdlife International that have been recorded in the Bahamas (White, 1998). Countrywide, species of concern include the White crowned pigeon, and the Bahama parrot, restricted to southern Abaco. Hunting controls, which restrict the season to the end of September, have successfully stabilized pigeon populations.

Pine forests are recognized as habitat for many avian species including the endemic Bahama yellowthroat (*Geothylpis rostrata*) and pine warbler (*Dendroica pinus),* in addition to the atala hairstreak butterfly (*Eumarus atala*) (BNT, 1995). The habitat also provides wintering grounds for the endangered Kirtlands warbler (*Dendroica kirtlandii*) which winters exclusively in the Bahamas with one sighting reported for New Providence in 1997 (Lee et al, 1999).

Table 4-6: Avian Observations on the Albany Site, 2005

COMMON NAME	SCIENTIFIC NAME	STATUS / NOTES
Bananaquit	*Coreoba flaveola*	PR-B Common, endemic
Mourning Dove	*Zenaida macroura*	PR-B Common
Mockingbird	*Mimus polyglottus*	PR-B Common, displacing endemic Bahama Mockingbird
Baltimore oriole	*Icterus galbula*	TR WR Winter migrant
Shiny cowbird	*Molothrus bonariensis*	PR/SR/B Brood parasite, populations spreading
Loggerhead Kingbird	*Tyrannus caudifasciatus,*	PR-B
White crowned pigeon	*Columba leucocephala*	PR-B Common especially summer, hunting resource,
Pine warbler	*Dendroica pinus*	PR-B Common, endemic
White eyed vireo	*Vireo griseus*	WR Migrant
Red legged thrush	*Turdus plumbeus*	PR-B Common, a subspecies, *T. p. pumbeus* endemic to Northern Bahamas
Catbird	*Dumatella carolinensis*	WR
Smooth billed ani	*Crotophaga ani*	PR-B Common
Eastern phoebe	*Sayornis phoebe*	TR Migrant
Common Ground Dove	*Columbina passerina*	PR-B Common, abundant
La Sagra's Flycatcher	*Myiarchus sagrae*	PR-B Common
Bobwhite Quail	*Colinius virginianus*	Introduced, common
unidentified hawk (probably American kestrel	*Falco sparverius*	

Status information and notes, White, 1998
PR-B Permanent breeding resident
TR Transient resident
WR Winter resident
SR Summer resident
B Breeding

MAMMALS, REPTILES AND AMPHIBIANS

Countrywide, protected fauna include the rare Hutia, a rodent like mammal now found only in the Exumas, the Rock Iguana (*Cychlura cychlura*) and three species of snakes. While wildlife observations were limited during the terrestrial survey, further investigations may give a greater insect and reptile species inventory although no other mammalian species are expected to occur on the property.

Table 4-7: Wildlife Observations on the Albany Site, 2005

COMMON NAME	SCIENTIFIC NAME	STATUS / NOTES
MAMMALS		
Rat	*Rattus norvegicus*	*Introduced / nuisance pest*
Racoon	*Procyon lotor*	*Introduced / nuisance*
REPTILES		
Brown anoles	*Anolis sagrei*.	*Common*
CRUSTACEANS		
White land crab	*Cardisoma guanhani*	*Occaisional*
Hermit crab	*Coenobita clypeatus*	*Common*
INSECTS		
Little sulfur	*Euremis lisa*	
Gulf fritillary	*Agraulis vanillae.*	
Fire ant	*Wasmannia auropunctatus*	*Introduced / nuisance*

4.10 Uses of biodiversity for fishing, hunting, crabbing, straw work, boat building, etc.

Previous activities on the subject site, including residential use, water and aggregate extraction, have significantly limited both the extent and usefulness of natural biodiversity. The pineland is second or third growth pine (*Pinus caribbea*) and of little current value for either timber or pulpwood. In some areas, Thatch palms (*Thrinax morissii)* were high in number, which could be used for straw work. However, this does not appear to be a limited resource countrywide and as the site is already privately owned and used, the project does not remove an existing resource from the local community. Efforts to retain and transplant as many specimens of this attractive tree as possible will be made. While *Pinus caribbea* has recognized economic value as a managed forestry resource, the pinelands in question on the site are privately owned by New Providence Development Company and the proposed land use change does not remove an existing resource from public use. With the exception of one sighting of a White crowned pigeon (*Columba leucocephala*), no other species were noted that comprise traditional hunting prey. A

small number of Land crabs were observed landward of the coastal zone on the Albany House grounds and observations by local residents (Pericles Maillis, pers. comm., 2005) note use of the eastern property boundary walls by crabs migrating to the sea to spawn. Little use of this resource is possible in the existing condition. Additionally, the private nature of the Albany house and grounds has prevented use of the broadleaf coppice grounds by local residents. Few or no resources where observed therein of significant value in traditional uses.

4.11 National parks, protected areas, and marine reserves within the area of influence

Considerable efforts are underway countrywide to establish a system of land and sea preserves to conserve marine and terrestrial resources. Under the auspices of The Bahamas National Trust a system of twenty-five National Parks, protecting more than 70,0000 acres of marine and terrestrial habits, exists (see http://www.bahamasnationaltrust.com/nationalparks.html). Several sites on New Providence are protected including the 'Primeval Forest', established in 2002, located close to the northwest corner of the subject site. The forest will remain untouched and represents an area of value as an eco-tourism site. A privately-led consortium including local dive operators are spearheading efforts to establish a marine park south and west of the Albany project. Project owners are participating fully in these efforts.

In the undertaking of the Environmental Impact Assessment (EIA) for the project, all dive sites, coral heads and seagrass beds in the vicinity of the project were mapped. In response to this, the access channel to the marina was positioned so as to be as far away from these features as possible and to be located primarily in areas of sandy seabed. In addition, mitigation measures were recommended that would minimize the impact of the initial access channel dredging on the surrounding environment. These include:

- The use of turbidity barriers deployed with skirts hanging from the surface to near to the seabed.
- Best management guidelines will be included in the Environmental Management Plan and the technical specifications for all dredging operations. These will include turbidity monitoring guidelines, which will require turbidity measurements at stations within the vicinity of the dredging operations. This monitoring will guide the dredging operations to ensure turbidity levels are in accordance with EPA recommendations.

4.12 Adjacent communities, demography and economic base and status

Based on the 2000 census, the total population of the Bahamas is 303,611, giving a density of 56 people per square mile. Nassau (in common with Freeport and Marsh Harbour) is a major population center, and home to 210,832 of those, (over two thirds). This gives a density of 2,635 people per square mile for New Providence, as compared to 10 per square mile in the rest of the country and far greater than comparable countries in the rest of the Caribbean (Sealey, 2005). With the exception of freshwater supply, (and

reliance on imports by tanker from Andros), New Providence is able to provide homes, jobs, health and education for its inhabitants. It is interesting to note that over 50% of the populace is less than 25 years in age.

More than 85% of Bahamians are black descendants of slaves and freed African peoples. Other cultural and ethnic groups include descendants of predominantly white British Loyalists, American and European ex-patriots and immigrants from countries such as Haiti, Cuba, Jamaica and the Dominican Republic. Repatriation of illegal immigrants, (the island country poses particular challenges with regards to border control), represents a considerable Government expense. The Bahamas has the third highest per-capita gross domestic product (GDP) in the Western Hemisphere, which limits eligibility for international funding that would aid in rural communities and depressed urban areas, a fact which is of concern to many Bahamians (GEO, Bahamas, 2005).

The growth of the city of Nassau accelerated following the influx of Loyalists to the country in the late 1700's. Various settlements including those for freed slaves (for example at Gambier and the nearby Adelaide) were set up but growth of the city eventually dominated the small island. Over the past 20 years more people have been moving out of the city center into planned developments in the suburbs. Albany is located in a suburban area of the island.

4.13 Existing opportunities for employment

Industries and businesses important as major employers within the city and on New Providence include;

- Transportation services via the International Airport, inter-island ferry, cruise ships, container and cargo vessels to terminals such as Potters Cay, Arawak Cay and bulk oil to Clifton Pier, west of the subject site. Also within island, transport by taxi, car rental and buses.
- Warehousing and handling of goods and supplies for New Providence itself, and for shipment to the rest of the country.
- Tourism and cruise stopovers with major resorts and hotels including Cable Beach and Atlantis on Paradise Island. Golf, diving and other recreational business catering to tourists.
- Shops, restaurants and other commodity based business.
- Merchant services including domestic needs such as cleaning, gardening and other technical service based industries (plumbers, painters, mechanics, etc.).
- Building and trade vendors and suppliers.
- Banking.
- Medical.
- Education (schools and colleges).
- Government and other institutional employers.

Tourism is a billion dollar industry in the Bahamas which places the country second only to Cancun, Mexico, in popularity as a destination in the wider Caribbean. This is aided by not only the natural resources and recreational potential of the islands (for fishing, diving and boating) but also by its proximity to Florida. It is estimated that tourism provides 50-60% of the GDP, while banking contributes 12-15% (GEO, Bahamas, 2005).

4.14 Present land use

The entire property is privately owned and no Treasury or Crown lands will be affected by the development. All existing lands are in use, whereby approximately 70 acres consists of the Albany House, beach and grounds and the approximate 500 acres north of South West Bay Road, owned by New Providence Development, which are currently used for potable water extraction. This land, which is predominantly pine forest, has also been subject to past logging activity and large areas in the northern portions have been scraped down for gravel extraction.

The Albany House and grounds, with the perimeter pink wall, is a familiar landmark for residents of western New Providence and the house is a beautifully appointed vacation residence, commissioned and built approximately 15 years ago by Jean Chalopin. The house was built in the spirit of the Bahamian Great Houses of the last century and the estate includes landscaped and manicured tropical gardens with lakes and a variety of water features plus trails through the 70 acres (+/-) of adjoining coppice. There is approximately 3,200 feet of beachfront and a single viewing dock as well as provision for sports including tennis, gymnastics, volleyball, bicycling and a wide variety of water-sports.

Details of the facility:

The Main House (South Wing) (Ground Floor):

Reception rooms -

- A plantation-style reception room opening on to an inner courtyard garden.
- A 1500 sq. ft living room opening out on to the beach front and comfortably furnished in Colonial style - includes a grand piano.
- Dining room for 14 with a view on to the sea and a large verandah for cocktails.
- Library with a wide selection of books, and access to the beach.
- TV room with a large screen and surround sound system. A large selection of movies are available on laser disc.
- A family kitchen & pantry.

The Master Suite (2800 sq. ft plus large private shaded balcony overlooking the sea) (First Floor):

- King-size bed, fireplace and seating area.
- 2 (His & Hers) marble bathrooms with walk-in closets.
- 2 (His & Hers) Study rooms.

2 Guests bedrooms (with private seating area facing the north garden):

- Queen-size bed.
- Bathroom and walk-in closet.

The North Wing: 2 Guest bedrooms - these 2 rooms are connected by a common bathroom. They contain a queen-sized bed in one room and a single in the other.

The Cottages: (East & West Wings) - with large furnished verandahs overlooking the sea. Both cottages offer a bedroom with queen-sized bed, a bathroom, a living room with a pullout sleeper sofa, dining room and a kitchen. The main house and cottages are fully air-conditioned and equipped with ceiling-mounted fans and a music system throughout. All bedrooms have Internet access and e-mail. All the buildings are connected by covered walkways.
Pools And Gazebos: Two gazebos, used for outdoor dining, flank the pools. Both pools are heated, and are equipped with an underwater sound system and night lighting.

Beach House: An equipped gym room overlooking the sea and wooded areas, with shower and changing room.

Tennis Pavilion: A plantation-style balcony with a bar incorporated for great viewing of the game.
Main Kitchen: The kitchen is located at the northwest end of the estate.

The house will be modified to serve as a clubhouse and social center for future residents of the Albany project.

4.15 Transportation, including docks, roads, airports, and improvements needed

New Providence is the best-served island of the 700 that make up the country of the Bahamas with regular air transport to national and international destinations. The site is strategically located only 5 minutes by car from the International Airport with direct flights to Europe, the Caribbean and the U.S., as well as to and from the Family Islands of the Bahamas. Two Fixed Base Operators (FBO) facilities at Nassau International (Million Air and the Jet Center) provide service to the growing numbers of private planes and jets coming to the country and the airport recently completed major improvements to runway 14/32.

Boat traffic to the island consists of cargo and mailboat service to Arawak Cay, cruise vessels to Prince George Wharf and local fishing, mailboats and private boats to Potter's Cay, all located in or close to downtown Nassau. Bulk fuel, which provides the power generation for New Providence, comes by tanker to offshore loading bays just west of the project site at Clifton. The deep-water, which surrounds the north and west side of the island, helps make large vessel traffic possible. Nassau is a major transportation hub for goods and resources for the entire country and the handling of those goods, warehousing and on-going transport, is an important industry. Plans are being developed, by the Government of the Bahamas, to alleviate downtown Nassau traffic congestion by moving a major component of commercial boat traffic out of downtown Nassau to a new port development at Clifton.

Marinas, catering to hundreds of privately owned recreational yachts, include several marinas in Nassau harbour, Atlantis on Paradise Island, Sandy Point on Bay Street between Albany and downtown, Port New Providence and Lyford Cay Marina The proximity of New Providence to other family islands including the Berry Islands, Exumas and Andros, make day trips and recreational diving and fishing an important part of life for residents of New Providence.

An extensive system of primarily two-lane roads crisscross the island with major thoroughfares including Bay Street along the northern shore and West Bay Road along the south part of the island, bisecting the project site. Roads on New Providence were modified from original cart paths and now accommodate the thousands of vehicles owned by residents. Traffic in downtown Nassau is frequently congested. Adding to a busy road system are large numbers of pedestrian tourists, particularly from cruise ships on Bay Street downtown and around the resorts of Cable Beach. While roads are far less frequented in the western suburbs, around the project site, the island as a whole will need on-going and continued improvements.

No further transportation needs will be generated by the project in terms of commercial boat traffic or air transport. Re-alignment of West Bay Road is described in section 4.26.

4.16 Infrastructure and public services

As a capital city, Nassau is well served in terms of medical, banking, insurance, stores and schools, and the many other services and requirements of life in the 21st century. While the project will make use of existing businesses and industries, it will most certainly generate new entrepreneurial endeavors to fully capitalize on the additional market. No needs are known of, at the time of writing, which would preclude or in any way prevent development and full use of the project. Project developers have been in consultation with representatives of major Bahamian industries such as BEC and Batelco to ensure power and communications (respectively) are fully available for future project needs.

CULTURAL ASPECTS

4.17 Historical Overview

The island of New Providence lies on the Great Bahama Bank, part of the Bahama Carbonate Platform which has formed over millions of years as carbonate sediments were deposited on the Atlantic Ocean seabed. This process dates back to at least the late Jurassic period when dinosaurs roamed much of North America. The Bahama banks, underwater at that time, would slowly rise above sea level as layer upon layer of sediment built up and sea level dropped. Carbonate sediments from this process occur to at least 25,000 feet below the surface (Schlager and Ginsburg, 1981). This sedimentation process continues today as millions of cubic yards of carbonate sediment forms and is deposited on the Bahama banks each year. This occurs via several different processes, both biogenic (from living organisms; shells, coral, calcareous algae, etc.) and lithogenic (from abiotic processes such as the “whitings” that can be observed over the banks today, which are actually calcium carbonate precipitating out of seawater and being deposited on the sea bottom).

During the period of the last ice age, some 20,000 yrs ago, sea level was much lower (up to 100 meters below mean low water today), leaving the entire Bahama Banks high and dry. The atmosphere was much cooler then and the Bahamas would not have had the tropical climate it does today. In fact, temperatures would have been so cool that ancient animals roamed what must have been huge open grass prairies and forests, which now lie in the shallow water of the banks. At the edge of the banks were large sand dunes and high sandy areas, which, over time, lithified into rock formations, which are today the islands of the Bahamas.

Man first showed up in the Bahamas somewhere between 2,000 - 1,500 years ago, coming over the water from islands to the south, in search of new lands to inhabit or probably fleeing from cannibalistic Carib tribes. These first inhabitants of the Bahamas were Arawak or Lucayan Indians. They were said to have totaled over 50,000 by the late 1400’s and early 1500’s when the Spanish first arrived. Unfortunately, by the mid 1500’s the entire population had been wiped out by disease or enslaved by the Spanish and transported to the silver mines of Hispaniola (today’s Dominican Republic and Haiti). Hopefully, these original native Bahamians mixed blood into the population of the Taino Indians living in Hispaniola at the time, but we may never know. (Spanish records from a voyage of Ponce de Leon to the Bahamas (Bimini) in the mid 1513 found one old crone and later mid0century voyages found no remaining native peoples in the islands of the Bahamas.

It is believed that the Lucayans lived primarily along the coasts, (or at least few inland sites have been identified) subsisting on a diet of fish and game, shellfish and turtles, accompanied by land plants and animals along with some primitive cultivation.

The seaward side of the project area is today fringed with a concave sandy beach ridge (" white land") and lies at the western end of the original Adelaide Tidal Creek and Wetland drainage area with the western mouth of the entire drainage system formerly within the site with creek bed running east across the Albany/Maillis property line, through the adjourning Maillis property and Thompson Farm Estate to the east and beyond for 1.5 miles to the eastern entrance which is still functional after restoration works inn 1990. The Adelaide Creek also flowed inland and is linked to Corry Sound, running all the way up to Coral Harbour.

The Adelaide Creek system would have once provided good fishing, conch, crab and other protein resources, and the beach ridge at the eastern end of the project areas coastal area, and extending onto the Maillis Property part of the Beach Ridge is known to have been used at least a temporary encampment, for an undetermined number of Lucayans..

Unfortunately, wood and thatch huts leave no archaeological footprints and Lucayan sites are identified by the presence of palmetto-ware pottery, shell beads, shells and charcoal and sometimes fish and other bones. However, even such traces are scanty and would have been swept away down into the creek to the north by hurricane surges over-topping the ridge, such as occurred as recently as 1964 (Hurricane Betsy) and 1965 (Hurricane Inez), and many times over 500 years leave beach ridge sites highly disturbed.

As said, this Adelaide Creek mangrove creek had a connection to the sea, within the subject property and was reported until recent times (pre-1926) to have been navigable at high tide for small boats all the way up to Adelaide Creek. The junction of the mouth of this creek with the sea would have been a logical site for primitive inhabitants and their small dugout canoes. They would have the bounty of the sea available along with the fresh water resources adjacent to the creek system.

The Project Developers have been made aware anecdotally by the only but very knowledgeable neighbours, particularly P. A. Maillis Esq. of discoveries by his family of significance, including the best ever found well preserved Lucayan skull, currently on loan to the Antiquities and Monuments Board, washed out from former creek-bed salt muck pushed up during reclamation works in the vicinity of the Maillis houses in the 1960s and also of hundreds of Lucayan- opened conch shells washed out of the Maillis Property beach ridge by the out-wash from Hurricane Betsy (1965). Hurricane Betsy ran unstopped for three days and eroded the opening down to bedrock. Lucayan artifacts were also reported found in a cave at Clifton between the Shell docks and the Brewery (per Winters, carbon dated 1140 AD+), in the South Ocean Beach Hotel area as well as within the Clifton Heritage Authority areas, all well beyond the subject property.

The Project developers have also been advised that Government supervised archeological surveys studies took place along the beach ridge in the 1980's (Winters) with a series of test pits which apexed in archaeological signs just within the Subject property from the east, with the apex site researched by Laurie and Farnsworth summer teacher / student teams in the early 1990's. Such data and few pottery shards and beads as were found are reported to be in the possession of the Bahamas Authorities and it is not considered that further discoveries would be made. It is also well known that such sites were not used for burials – blue holes and deep pot holes were preferred) so the subject property would not have the same status as burial mound sites such as occur on mainland North American sites.

The territory of the Bahama Islands was claimed but not permanently colonized by the Spanish, and possibly French and Portuguese settlements may have been tried but it was the British who colonized New Providence from the late 1640's on.

There is no recorded or even oral history of activity on the site during the pre-loyalists "conch" period. It is likely the site saw little use by man during this period, between the 1500's when the natives were eradicated and the 1780's when the loyalists arrived. Even within very recent living memory (per P. A. Maillis reporting on his boyhood in the area in the 1950) the area was severely mosquito and sand-fly infested – which in historical times would have been likewise, and much worse.

It is likely that individuals in small boats visited and encamped at Adelaide Beach from time to time indulging in the practice complained of by many Royal Governor's of inhabitants departing from farms and productive labours to " a-coasting" and "progging" – ie. voyaging in small sail boats and fishing/ hunter-gathering and living off the land and sea- but no record or mention of the area is know to survive before the arrival of the loyalists.

The subject property did however become important, peripherally, with the Loyalist coming and the grant of 200 acres to the Moss family – called "the Promised Land". It is reported however that his property was never used as a main plantation but was occupied by the Plantation Fisherman of the Moss Plantations, the main great house Complex of which was westwards in the vicinity of the South Ocean golf Course, where there was also an Artillery Battery and military complex as well, on high hilly land overlooking S.W. Bay

Within the subject property, the Moss's are reported to have caused a Fisherman's house to be built, sometime in the late 1700's early 1800's and slaves were assigned to "the Fisherman", an important economic post in Bahama Loyalist Plantations. The site would have served to serve as a base for the fishing operations of the Moss's "plantation". Fish and seafood, with home-grown corn grits and sweet potatoes and other starches, made a cheap and available source of subsistence food for the slaves.

From ground floor remains, it is known that small, tabby slave huts also existed on the site near the Fisherman's house Before the 1926 hurricane sealed off the western entrance with the still visible ship-wreck, the Creek -mouth would have served as a safe anchorage for small boats, with rich fishing and conching nearby, and the slaves assigned to work with the Plantation fisherman would have rapidly become the skilled seamen, fisherman and mariners of the generations thence.

Tabby construction was common during the period and is done by burning conch shells in a very hot, oxygen starved, fire to produce a fine powder, lime, which is mixed with sand and rock to form an ancient type of concrete. The tabby walls of the old fisherman's house still stand on the Albany tract and will be preserved as a park adjacent to the marina.

After British emancipation (1832-34), the Moss Plantations' slaves were freed,the Moss plantations collapsed and some of the former slaves went to live in Adelaide, bringing their fishing and boating skills with them. The Fisherman's House was likely abandoned around this time. Currently negotiations are underway with The Antiquities, Monuments and Museums Corporation (AMMC) with regards to the Fisherman's site and the developer has made arrangements in the drat Heads of Agreement for access to the same for the public on an agreed basis.

Detailed excavations and archeology were done under Bahamas Department of Archives and Bahamas National Trust auspices, with the then owner's permission, by Professors Laurie and Farnsworth summer teacher / student teams in the early 1990's and the Bahamas Government is in possession of detailed reports of which the above is an outline.

In 1834 the slave ship "Rosa", an illegal slaver, was brought to Nassau Harbour and the slaves freed. and the liberated Africans settled in a "mission" village of named Adelaide, 1.5 miles east of the site, founded with input from the Anglican Church and the Baptist society. The freed slaves from the Rosa were brought here by the Anglican Church and several generations of communal living ensued. Some Adelaide residents became excellent seamen, using Adelaide creek for their small fishing longboats with periodic cash earned providing tendering services when large ships were unable to enter Nassau Harbour by "rage" (ground-swells) or winter storms and had to disembark at the SW Bay Customs House (just below the Artillery Battery) west of Stuart Coves Dive Centre, where its ruins are still visible.

Figure 4-22: View of the historical remains of the Fisherman's Cottage, located within the Albany House grounds

The subject property was again uninhabited for almost another hundred years though the creek was used and heavy coal-burning took place in the pine barrens in this era. One of the three 1926 Hurricanes (per the late Julita Balfour, very old resident of Adelaide Village who died at age 105, per P. a. Maillis who knew her as a boy in the 1950's) wrecked a large lumber ship right in the mouth of the western creek mouth, which closed Adelaide creek off. The ship apparently dragged in from the south west and its engine is still visible offshore from the site and the remains of the wreck are still visible, but in final stages of break-up.

Loss of a safe harbour and calm inland water boat access to Adelaide, along with the repeated ravages of the three1926 hurricanes, two 1928 hurricanes, the great 1929 hurricanes , 1932, and 1935 hurricanes damaged the livelihood of Adelaide Village and set in motion the decline to coastal community poverty and hardship of the years following. Without a safe boat anchorage it became impossible for Adelaide residents to keep good boats, the shallow Adelaide bar having the tendency to pound and destroy boat bottoms.

Ecologically, with the western mouth of the creek blocked, and the open waters of the creek increasingly sectioned off by cause-ways and reclamations, the entire western end silted up from the prevailing E-W wind blown drift of silt, detritus, algae and seaweed etc., and succeeded to a cattail savannah which is how the former creek area is recalled by the only neighbours (Maillis), whose adjacent property also straddled the former Creek bed.

Several hundred yards west of the Moss Fisherman's house, the Bethell family built a beach cabana and used same as a wilderness cabin bring some human presence to the area. In the 1940's the un-granted, Crown Land section of the Adelaide Beach ridge from the South-east corner of the Promised Land Grant was cut up into 70 lots of land that were sold to various parties. Also the Creek was bridged where it passed Adelaide Village and the beach road extended down as far as the Maillis property. This brought on the development of approximately 30 beach houses and cabanas bringing some employment and economic activity (the original second- home industry).

At the same time Sir Robin Baxter, built a two-storey stone house on the western end of the project Area beach, where the Albany great house now sits. Baxter was a wealthy Englishman who had undertaken to secure and preserve representative genetic stock of all the British species of dogs as a war project to secure their preservation in case England fell to the Germans, for their eventual restoration. Some dog kennels were also on the subject property though the main area of this project was in fact Orange Hill.

In the 1950's and 60's, the late Senator K.M. Thompson and Hon. Alexander P. Maillis reclaimed sections of the former creek bed east fo the subject property, cutting it off forever from eastern drainage and the Thompson reclamation . This totally stopped drainage to the area of the Maillis property, causing cattail savannah expansion and serious flooding.

To alleviate these conditions Government at the time gave permission to Mr. Maillis to open his property to the sea, but funding at the time did not permit same but after Hurricane Betsy (1965) the beach ridge was breached and out flowed and a culvert installed. The beach ridge has again been open to the sea through the Maillis property after each major hurricane (Andrew 1992, Floyd, 1998, Michelle, Jeanne and Frances,2004) and in between a culvert fed tidal culvert has help stave off flooding from rains. The western of the Maillis ponds which is to be opened as a small sub-harbour to the Albany Harbour, has been salt since 1964 and a carefully one-way drainage system has been maintained by the Maillis family on their side ever since. Before the great Chalopin wall (circa 1993) the Maillis drainage initiatives benefited the eastern section of the Project site as well. Since the wall, there has been some periodic flooding during storms and heavy rain to the north of the wall along West Bay Road (Figure 9., Appendix VII) west of the main gate to the property, due in part by the wall blocking drainage and historic filling of lowlands on the South Ocean property. The problem will be alleviated with modifications to the wall, allowing the flow of water from the area of problem into the stormwater system.

In the years subsequent to the 1940's and leading up until today, the Albany property was logged for pine (there were1870's historical accounts of pines up to 70' in height) and in the 1960's and '70's a system of open ditch wells was constructed on the Albany property north of the main road by New Providence Development for fresh water extraction and a part of the N.E. quadrant of the property was strip-mined of soil and hard crust rock.

The current Albany House was constructed in the 1990's by Jean Chalopin, a French cartoonist and creator of the "Inspector Gadget" character and other cartoons. In 2004 this house and 70 acre estate south of the S.W. Bay Road was acquired by the current property owners.

4.18 Archaeological and historic resources, inventories, location, description and significance

These have been fully described above and Government Authorities are custodians of the above referred studies, which were pushed for by both The Department of Archives and the Bahamas National Trust when their joint efforts were pushing to develop a Historic Register for New Providence, in the 1990's, ahead of the development processes In the unlikely event that cultural artifacts be unearthed during construction, qualified archeological consultants will be engaged to properly manage, document and preserve any significant finds and full compliance with the letter and spirit of The Antiquities and Monuments Act.

4.19 Paleontological resources (fossils), inventories and locations

No surface fossil resources or signs thereof were located during the survey periods. A specific Paleontological survey was not performed and is not deemed necessary. Most rock cutting in the Bahamas ends up going through fossil sand- rock strata replete with shell fossils not considered remarkable. However if rock cutting does reveal or un-earth new or unusual fossils and full compliance with the letter and spirit of The Antiquities and Monuments Act will be followed.

4.20 Tourist and recreational areas, use and access

As the property is currently privately owned and managed, it does not provide a significant tourist or recreational resource for local residents. The Albany House is used as a rental holiday home and while the grounds are gated and private, the beach is accessible on-foot from the South Ocean area and from Adelaide. Most of the tourist activity on New Providence is centered around the resorts and hotels of Cable Beach and Paradise Island. Little use is made of western portions of the island, particularly since the closure of the South Ocean Hotel and Golf Club. Tourist use of the area is primarily for dive operations out of Stuarts Coves with guests traveling by bus, taxi or private rental car to the facility. Offshore dive locations are noted in the supplemental coastal report presented in Appendix II.

4.21 Aesthetics and visual impacts

In the existing condition, the well-field areas north of West Bay Road have been negatively impacted both in ecological and visual terms through historical logging, aggregate removal and water extraction. The Albany House is well maintained for use as a high-end rental property.

4.22 Community organizations, including local government

Not known.

PROVISION OF SERVICES

4.23 Potable water

The quantified freshwater resources of thirteen of the larger islands of the Bahamas comprise 28% of their total land area. Resources are comprised of the fresh, brackish, saline and hypersaline water found in the shallow and deep subsurface, and in the lakes and ponds that occur on the surface. The freshwater resources occur as three-dimensional lens-shaped bodies, which float on and overlie brackish and saline water. These lenses do not occur in subterranean lakes, rivers, or ponds. Groundwater permeates the rock and all its pores, fissures and interconnected cavities. More than 90% of the freshwater lenses are within five feet of the surface. Groundwater resources in the Bahamas have always been easy to exploit, and regular usage dates back to the earliest settlers. Today, water is still privately obtained by bucket from shallow hand-dug wells; public supplies are obtained from mechanically cut trenches, pits and seasonal freshwater marshes (UN, 2004).

To estimate needs and the potential of the site for water extraction post-development, an extensive hydrogeological study was carried out and is presented as a supplement to this report in Appendix III. Briefly, potable water use will be provided by a connection to the potable water supply system of New Providence Development Company (NPDCO). An approval letter will be submitted to BEST upon receipt. The estimated peak day potable water use for the project is about 258,000 gallons per day (gpd).

4.24 Sewerage and wastewater

Throughout the country, the principal method of wastewater collection and disposal systems are septic tanks and pit latrines systems (90%) and the remaining ten percent (10%) are on centralized sewerage collection systems, which includes systems on the island of New Providence. The Building Code requires a treatment plant installation at developments with a wastewater flow greater than 6,000 US gallons per day, which prompted the twenty-four (24) lot subdivision policy requiring developers to install a sewerage collection and treatment plant system.

On New Providence, 37 sewer collection systems serve approximately one fifth of the capital Nassau, the remaining households use septic tank systems. On the other islands, treatment is limited to a few small subdivisions and some private developments and hotels. Septic tanks are used most commonly on the major islands though these do not always conform to the Building Code and therefore may not function in the manner that they should. In the less developed areas, pit latrines are common and there are some

places where direct discharge to the sea is still used as a means of disposing of wastes. The use of septic tanks is usually combined with a drain field or disposal well. Where sewerage treatment plants exist, the wastes are normally treated to primary or secondary levels, and the effluent is then disposed of in a deep disposal well. Many different types of deep disposal wells are utilized discharging a wide variety of liquid wastes. The wells that are used to dispose of large volumes of effluent are normally cased down to about 200 metres and are open below this depth. Tourist areas usually include golf courses, and these require considerable volumes of irrigation water. In such situations, the wastewater from the hotels is usually treated and reused on the golf course. The waste disposal methods used in The Bahamas are presently far from satisfactory, and studies have shown that the groundwater underlying urbanized areas shows relatively high levels of pollution. There is also evidence of seawater pollution, particularly in some enclosed harbours, which are important tourist destinations or may be involved in the seafood industry (CEP, 1998).

All wastewater generated by the project will be treated at a new plant to be located at the Airport Industrial Park, due north of the Albany project. Negotiations are in the works currently to construct the new plant and upon an agreement being reached by The Water and Sewerage Corporation, an acceptance letter will be forwarded to BEST. The proposed treatment plant has an initial capacity of 160k gpd expandable to 300k gpd. Expansion is scheduled for about 5 years after initial construction. The construction of the initial plant will begin in the second quarter of 2006. The raw effluent will be delivered to the plant via force main from Albany lift stations.

4.25 Electricity

The Bahamas Electricity Corporation (BEC) provides electric power via oil-powered generators to Nassau and the Family Islands, excluding Grand Bahama. Oil is shipped via bulk carrier to the pier at Clifton where the power station for New Providence is located. BEC will provide power for the Albany project and all electrical lines and other utilities will be located underground. Backup power for the Albany House cottages will be via a Kohler Package Generator. Its location, though not confirmed, is anticipated to be just west and north of the existing Albany House in the service courtyard. Backup power for all developer owned equipment would be located in the service compound on the northern boundary. Backup power for the rest of the development is not currently planned but will likely be added by the larger homes and other buildings that are constructed.

4.26 Roads

An important component of project plans is the re-alignment of West Bay Road, which currently divides the Albany House portion of the project from the water-fields to the north. Working in coordination with appropriate government departments including representatives of BEC regarding underground fuel and utility lines, the segment of road in question will be removed and repositioned north of the property.

Coming from Adelaide, traveling west on West Bay Road, future traffic will deviate to the right at an attractive roundabout and gatehouse to travel north along the western property boundary, then turn to the west again, running along the northern property line. An additional project entrance will be located mid-way along this northern property line and at the northwestern corner of the property; traffic will turn left at another roundabout to travel south towards South Ocean or right to go north towards the airport and downtown Nassau. This new segment will be built to modern road engineering standards, be a two lane facility and attractively landscaped, all at project owners expense. The road will be a positive addition to the road system on New Providence.

LEGAL AND REGULATORY

4.27 Pertinent laws and regulations, including the Antiquities, Monuments and Museums Act

Not known.

4.28 Government agencies involved in permitting and licensing, etc.

Bahamas Investment Authority

Bahamas Environment, Science and Technology Commission

Department of Environmental Health Services

Ministry of Works and Utilities

Port Department

Water and Sewerage Corporation

CHAPTER 5: ENVIRONMENTAL IMPACTS

5.0 Methodology for the impact assessment

To accurately assess the impacts to the environment attributable to the proposed project, fieldwork was undertaken to map and describe habitats, species and physical parameters of the site. The upland site was surveyed on foot with observed species noted and photographed and physical conditions described. Ground-truthing was accompanied by low-level flights and photography to map and depict on-site features.

Marine portions of the project and surrounding area that would be affected by access channel dredging and navigational improvements were snorkeled and habitats characterized, photographed and described, (see supplemental report by Smith-Warner International, Appendix II). A preliminary bathymetric survey to gain an understanding of water depths in the project approaches was also carried out.

Consideration of the likely results of planned work was made based on knowledge of proposed construction methods and experience with similar projects. The following descriptions address likely impacts and cover negative effects, which will be countered both during and after construction. These are summarized in Chapter 6: Mitigation Measures.

IMPACTS TO THE PHYSICAL ENVIRONMENT

5.1 Erosion, sedimentation impacts

Background

Major land clearing and modification to natural topography in addition to dredging for marine improvements can result in the transportation of air and water borne sediment of variable grain size and subsequent deposition in natural areas. In the marine environment, increased turbidity reduces light penetration and hence primary productivity by marine vascular plants such as seagrasses and macro-algae as well as coral species, which rely on food sources in part produced by symbiotic algae. Deposited sediment can smother sedentary marine species and reduce the feeding ability of mobile marine vertebrates. On land, coating of plant leaves with dust and fine debris can reduce both photosynthetic ability and gas exchange.

Limitations on impervious surfaces and protection of open-space (undeveloped) areas have been recognized as important sediment control methods (see Guidelines for Sediment Control Practices in the insular Caribbean, CEP Technical Report, No. 32, 1994). By reducing impervious surfaces, more precipitation has the opportunity to infiltrate into the ground, resulting in less stormwater runoff. This

reduces erosion caused by storm runoff and makes it easier to manage stormwater flows. In addition, prohibiting or restricting clearing in steep-slope areas can avoid many potential sediment problems, such as surface erosion. This is illustrated in the following diagram from Guidelines for Sediment Control Practices in the insular Caribbean, CEP Technical Report, No. 32, 1994 and shows clearly the importance of retaining natural, vegetated landforms in a post-development scenario.

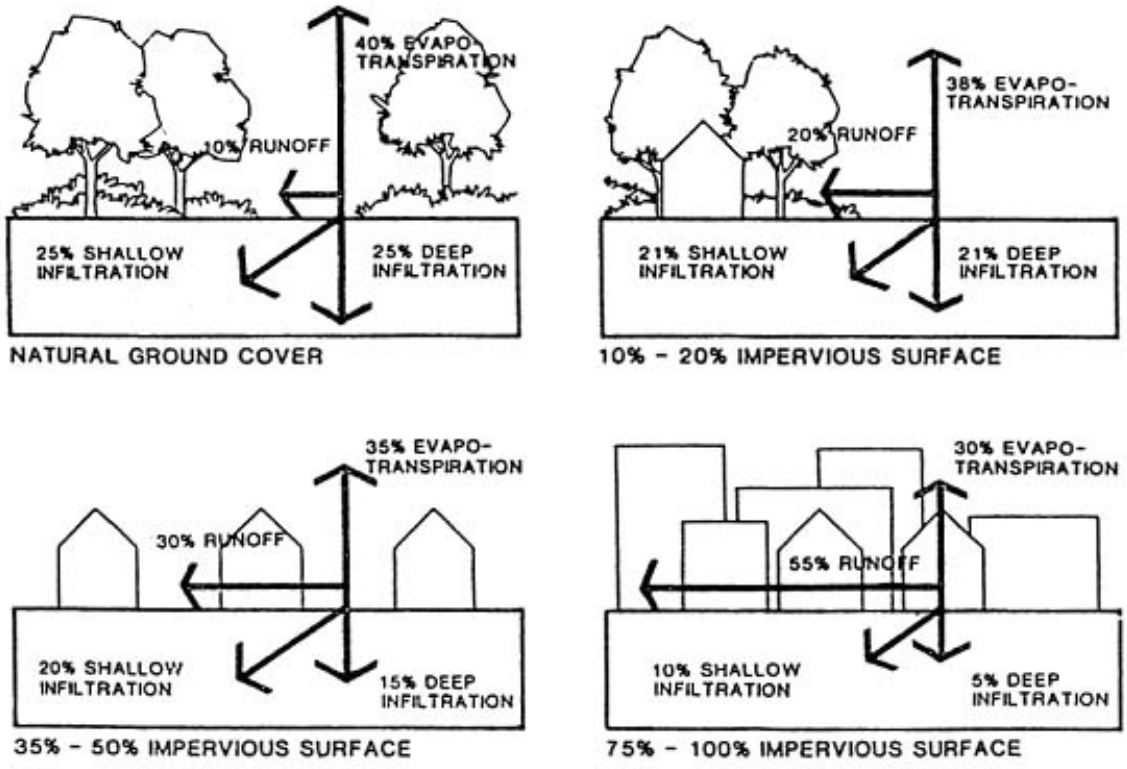


Figure 5-1: Landcover and runoff (CEP, 1994)

A summary of the potential sources of increased sedimentation through different phases and activities of the project, together with an analysis of likely impacts is provided below. Mitigation measures are detailed in Chapter 6.

Table 5-1: Sources and Impacts of Sedimentation Increases

ACTIVITY	TIME-FRAME	DETAILS	NATURE OF IMPACT
Road Clearing	Temporary; 0 - 24 months year from commencement of construction	Approximately 72 acres of roadways, which vary in width	Moderate, mitigation measures employed
Land Clearing for Golf Course, Residential and other Infrastructure	Temporary; during construction phase, 0 - 24 months. Permanent; reduced vegetative cover	400.2 acres cleared for golf course construction and residential /commercial or other infrastructure needs.	Moderate, mitigation measures employed
Marina Basin Excavation	Temporary; during construction phase, 0 - 12 months	Approximately 500,000 cubic yards of fill extracted. Basin closed to sea during excavation.	Negligible - basin and surrounding land already impacted by previous excavation and exotic vegetation, basin sides will be stabilized prior to free tidal connection with the marine environment.
Access Channel Dredging	0 - 12 months with maintenance dredging estimated at a maximum of every 3 - 5 years	Approximately 185,000 cubic yards of sand and rock removed to allow a controlling depth of a maximum -16' MLW. (Note: Dredge volume has been minimized from 500,000 cyd to 185,000 cyd)	Significant - turbidity plumes will be produced around the working equipment and extending at greatly elevated levels for a radius of approximately 100', moderately elevated for 1000'. Mitigation measures employed.
Increase in Impervious Surface Area	Permanent	48 acres of roadways and paved areas replacing natural land cover, with associated storm water run-off and reduced settling of suspended solids.	Moderate - drainage plans and grading will minimize impacts on natural communities.

Dredge Spoil for Use as Fill

Designated areas north of the proposed marina will be excavated and lined for use as proper settling ponds. The material will then be placed on an impervious surface within the golf course boundary, where the material will be segregated, cleaned and used as fill for the development.

Water Quality

As part of final construction plans, all areas, including golf course, residential portions and the equestrian center, will be properly graded to divert any surface water run-off to a system of vegetated swales and other permeable areas. This will allow attenuation of any suspended or dissolved materials, such as silt or sediment and oils and greases, prior to discharge into natural areas.

Restrictive covenants for homeowners will specify clearing limits as well as an allowable plant species palette. A voluntary, education focused approach to landscaping for homeowners will be incorporated. This will consist of supplemental information within the documents on the benefits of minimal and judicious use of chemicals associated with groundskeeping. All homeowners and landscape contractors will be required to acknowledge they have read and understood this information prior to commencing residence.

5.2 Hydrologic impacts

There are three fundamental hydrologic impacts from the development that were evaluated, which are: 1) impacts of the marina, 2) impacts of lakes, and 3) impacts of the water used for irrigation. Groundwater investigations were conducted to assess each of these potential impacts.

On-site investigations were conducted into the impacts of the proposed marina and how to mitigate these impacts. A total of 13 test wells were constructed in the vicinity of the marina to assess the thickness of freshwater in the lens and to characterize the hydraulic properties of the surficial aquifer. A three-dimensional groundwater flow and solute transport model was developed to assess the impacts of the marina. Model runs showed that the impacts of the marina were mostly vertical with little horizontal impact. Minor water quality changes could occur up to a maximum distance of 300 feet from the marina edge. Some drainage of freshwater would occur into the marina basin via horizontal flow. Additional modeling runs were made to assess the use of a curtain wall to reduce impacts of the marina. If a curtain wall was constructed along the northern and parts of the western and eastern perimeter to a depth of at least 19 feet below sea level, then the impacts to water quality would be significantly reduced and the discharge of freshwater to the marina basin would be reduced by at least 25%. A curtain wall will be installed considerably deeper than -19', which will further reduce the potential for fresh water discharge to the basin. This will ensure that the marina basin will have only minor and insignificant impacts to the freshwater lens and those will be limited only to the subject property.

Impacts of the proposed lakes were reviewed in detail. Because the impact analysis showed that large areas of deep lake would have potentially significant impacts to the freshwater lens, the total

lake area in the site development plan was reduced by two-thirds. Only 20 acres of lakes are proposed, located primarily on the golf course site. This reduced area and the construction of the lakes can be managed to keep impacts to the freshwater lens minimal.

A water budget analysis was conducted on the freshwater lens to assess how much water can be withdrawn for irrigation use without having a detrimental impact. It was found that the withdrawal of freshwater for use from the northern part of the site should not exceed 235,000 gpd. Other sources of water were recommended for blending with the freshwater to meet the desired irrigation demands. Potable water will be obtained from the New Providence Development Company (NPDCO), which operates the water plant, which provides water service to most of the western end of New Providence Island.

5.3 Air quality impacts

Operation of construction equipment including backhoes, earthmovers, bobcats, chippers and various other heavy machinery will result in temporarily elevated exhaust emissions during the construction phase of the project. There will also be some low level, fine material suspended by wind action following land clearing in dry conditions. Some burning of vegetative debris may also occur. These impacts are unavoidable but considered minimal given the low population density of surrounding areas. Post-construction air quality impacts are considered negligible.

5.4 Noise impacts

Equipment described above will also result in elevations of ambient noise levels during the construction phase. Given the low density, residential surroundings this impact is considered insignificant. The quiet, private nature of the project, post-construction, will negate any long-term adverse impact to noise levels.

5.5 Solid, liquid and hazardous waste impacts

Bahamians and visitors together generate more than 264,000 tons of municipal solid waste annually, with New Providence Island contributing about 77% and Grand Bahamas 17% of this total, leaving only about 6% or 15,800 tons annually generated on the other Family Islands (IAD, 1998). Issues recognized in the Family Islands of the Bahamas are related to uncontrolled landfill sites, which may also be located close to groundwater recharge areas (GEO Bahamas, 2005). A hazardous waste storage facility is planned for New Providence although it is unlikely that the Albany project will generate hazardous materials. Sources and sinks of solid waste generated during the lifetime of the project are shown in the table below.

Table 5-2: Waste Impact Summary

SOURCE	ESTIMATED AMOUNT	PHASE	DISPOSAL METHOD	IMPACT
Land clearing generating vegetative debris	Approximately 425 acres	Initial Construction	Retained on site and mulched for landscape use, with some burning	Temporary and insignificant as mulch will benefit landscaping plans
Miscellaneous construction debris	Not known	During construction	Transported to landfill	No on-site impact. One-time impact on landfill.
Hazardous materials (fuel, miscellaneous chemicals, paints etc.	Not known	During construction and operation for maintenance needs	Storage in secure, concrete lined building in golf course maintenance area.	Not known - spill measures will be incorporated into Environmental Management Plan, residual impacts addressed in Chapter 7
Dredge spoil	Approximately 500,000 cubic yards	During construction	Following settlement and drying, will be used on-site as fill material	Minor and temporary - some salt leaching may result to adjacent areas and surficial groundwater supplies.
Domestic waste	To be determined	Operation	Transported off-site to designated landfill	Permanent increase in quantity attributable to project. No additional land impacted.

Specific quantities of waste and hazardous materials onsite will vary with phases of construction and can not be estimated at this time.

During construction and ongoing operations all hazardous materials utilized on the site will be handled and stored in accordance with MSDS requirements. In particular a modular storage facility will be installed that meets EPA requirements.

Since chemical brand names and quantities cannot be specified at this time, as they will depend not only on final project approval and design but also on market availability at the time. Landscape and facility management plans will incorporate best practice to minimize chemical use as far as possible.

5.6 Fire and hurricane risks

The planned work will not entail any additional risk from fires or hurricanes. On construction of the public facilities (golf course and club, recreational amenities, private residences and marina village) safety manuals will be prepared outlining protocols and procedures for emergency situations such as fires and storms. Proper containment will be available for any hazardous materials and staff will be required to undergo training in emergency procedures and operation of equipment such as fire extinguishers and methods for securing facilities, such as the marina during named storms. Details will be provided in the Environmental Management Plan, to be completed on final, approved design.

Emergency Power

We are presently studying back up power requirements for the site. It is anticipated that a single back up power generation unit will be installed that will be sufficient to meet the emergency requirements of multiple residential units. It has not yet been determined where these will be located. All generators will conform to EPA Tier 2 non-roads emissions regulations and will be equipped with sound attenuation packages. It is anticipated that fuel delivery will be via a local vendor and will be delivered and stored in a dual wall sub-base fuel tank. Each generator will be placed on a concrete pad with an integral perimeter curb adequate to contain any potential fuel spill. Further details on management of potential impacts related to accidental spills will be provided in the Environmental Management Plan.

Storm Surge

The expected maximum storm surge inside the marina is 2.1m. Final engineering designs will be rendered following project approvals. It is likely that all fixed structures will be double cross braced to ensure structural integrity. Should floating concrete docks be employed, the access of rotation allows free range of motion as seas rise and fall. In anticipation of storm conditions which would entail a significant storm surge, all ancillary facilities will be closed and securely locked down.

5.7 Habitat loss and degradation impacts

Project plans entail significant loss in natural areas, albeit already impacted and reduced in value through previous activities. Direct impacts of construction are summarized below:

Table 5-3: Impacts and Preserves (Acres) per habitat type

HABITAT TYPE	IMPACT	CONSERVA-TION AREA	GREEN-SPACE	NATURAL BUFFER	TOTAL (EXISTING CONDITION)
(A) Dry Coppice	22.6		5.8		28.4
(B) Cabbage Palm	0.5		0.4		0.9
(C) Cattail	0.7		0.3		1.0
(D) Coastal Strand	0.9		0.1	3.7	4.7
(E) Cabbage Palm	0.9		0.3		1.2
(F) Casuarina	6.5		1.0		7.5
(G) Organic Debris	0.3		0.1		0.4
(H) Pine / Palm	11.0		0.2		11.2
(I) Disturbed/ Casuarina	9.3		0.1		9.4
(J) Pine/Palm	31.5		6.9		38.4
(K) Disturbed Mixed Weeds	5.6		0.3	3.3	9.2
(L) Pine	151.5	22.1	20.4	37.3	231.3
(M) Dry Coppice Ridge	6.6		4.9		11.5
(N) Pine (Open Canopy)	7.8		2.5		10.3
(O) Pine / Disturbed	94.5	3.2	1.3	37.1	136.1
(P) Disturbed Mixed Weeds	4.1		1.0		5.1
(Q) Pine / Disturbed		4.3			4.3
(R) Disturbed / landscape	6.0		0.5		6.5
Roads/Trails	39.9	2.2	5.6	7.1	54.8
TOTAL	400.2	31.8	51.7	88.5	572.2
Total Natural Areas		172.00			

Conservation Area: large, contiguous areas that will be cleared of exotic vegetation and protected from direct impacts of the development. Natural Buffers: narrow or small but connected areas that will be cleared of exotic vegetation and may be re-planted. Green-Space: areas that may be cleared and replanted but will remain as pervious natural area post-development.

5.8 Habitat fragmentation impacts

Natural areas remaining on-site will be reduced in size and lose connectivity with adjacent habitats. Fragmentation is already in evidence throughout the site, and has reduced wildlife value of existing communities in addition to furthering the spread of exotic invasive species. Taking into account the roads and trenches that crisscross the property, in the existing condition the largest contiguous habitat size is approximately 16 acres for pinelands in the northern sections. Contiguous sections of coppice habitat in the grounds of the Albany house are even smaller. While traffic and human activity is low in the existing condition, restricted to groundskeepers, guests at Albany and personnel of New Providence Development Company, providing a quieter and thus arguably better environment for wildlife usage, the existing degradation has several effects;

1) Pinelands are not managed and burned; hence in many areas they are undergoing succession to broadleaf coppice. Increased density in the midstory strata reduces usefulness of the habitat for wildlife, as flyways are limited. Additionally, the midstory provides a fuel source which can cause forest fires to burn more intensely and potentially damage remaining canopy pines.

2) Roads and trails have furthered the spread of exotic species and created artificial ecotones or transition areas where roadways are fringed with a variety of weeds and nuisance species, as well as exotics.

Post-construction, the largest, intact, natural community will be comprised of an approximate 32 acre conservation area in the northeastern corner of the site. Restoration activities will enhance a small scrape-down area therein (4.3 acres). Additionally, buffers and green-space throughout the site will be conserved. Attention is drawn to plan revisions which have reduced acreage of planned lake features to maintain additional green-space extending through residential areas and contiguous to the golf course (see Chapter 2, section 2.1, Project Alternatives). The golf course native habitat areas will total three times that of contiguous preserves, providing a wide range of opportunities for transient and local wildlife. Retention of these native habitats where golf course construction and contouring will not directly impact them, will be an important ecological benefit to the project. Where impacts are unavoidable, these native habitats will be restored using the materials from the native plant palate (Table 6-1) in Chapter 6.0.. With these considerations, project plans will not significantly alter existing levels of habitat fragmentation.

5.9 Biodiversity impacts, especially on rare or protected species

Three species of plants afforded protection by the Government of the Bahamas will be affected by the development; Blolly (*Guapira discolor*), Pine (*Pinus caribea var. bahamensis*), Red cedar (*Juniperus barbadensis*) and Mahogany (*Swietenia mahogani*). Wherever possible, all specimens of protected trees will be retained on the site and relocated if needed, such that no loss of plant genetic resources will ensue.

A commitment to utilizing native species with demonstrated wildlife value and to manage preserve areas, including maintenance of the site free of exotic species, may ameliorate some of the loss of natural habitat described in 5.7. It has been shown that habitat fragment size is not always positively correlated with the abundance of migrant bird species. Waide and Wunderle, 1993, showed little difference in migrant diversity or abundance between large intact tracts of pineland on Andros and smaller, previously impacted pine communities on New Providence. Regional and/or cumulative impacts of this loss are not considered, however it is noted that continued degradation of the project site, if remaining in the existing condition, would also serve to reduce wildlife value.

All exotic and nuisance species recognized in The National Invasive Species Strategy for The Bahamas (BEST, 2003) will be removed from the site and the property maintained in an exotic free state. This represents a significant and positive environmental impact.

Coral relocation (to be carried out by qualified biologists) associated with the dredging of the marina entrance channel will be subject to field based judgment in the appropriateness of transplanting a given colony, a pre-defined plan will not be provided. Reporting and on-going monitoring will document the success of both the initial work and longer term achievements. Likewise a separate dredging plan will not be submitted, details will be found in marine construction plans following project approvals. No surety bonds are considered necessary at this time and it should be noted that project developers have pledged a significant sum to The Government for mitigation purposes.

5.10 Impacts on special features, such as caves and blue holes

No caves or blue holes have been observed on the site at land surface. No significant large cavities were found in the boreholes, which were drilled to depths up to 40 feet.

SOCIOECONOMIC IMPACTS

5.11 Land use impacts

The entire property is currently under private ownership. North of South West Bay Road the land is owned by the New Providence Development Company. This previous use and the hydrological record of the site has been taken into account in the design for the area which will include a golf course, a new road alignment and residential/townhouse units. Since freshwater withdrawal will continue after the project is built, the two or three jobs that are generated by the well field work will remain a part of an expanded work force which will manage the potable and irrigation water needs of the new community.

South of South West Bay Road the current land use is that of a 70-acre private estate with a marina basin, which was temporarily connected to the sea. This use is being converted into single-family beachfront home sites, a marina basin connected to the sea, a marina village with multi-family units around the marina basin and an exclusive clubhouse, pool and dining facility on the beach. Figure 4 in Appendix VII depicts the proposed area of impact to the existing basin. Back filling with clean fill will be conducted after the marina basin seawall has been installed to create an enclosure.

5.12 Impacts on neighboring communities (such as imported labor including foreign workers)

Neighboring communities include single-family residences and the South Ocean Golf course to the west and a single-family property to the southeast. The Adelaide community is several miles to the east. Impacts to these communities should be limited other than the fact that property values in the area should rise dramatically and the area will take on a more urban feel with the significant development planned. There will likely be some, legally registered, foreign workers involved in the construction process but in the long term, only a few foreign personnel will be employed by the project with the exception of grounds and maintenance personnel, who may end up being of foreign origin since these positions can be hard to fill locally. Crime should not increase as a result of the project and may even decrease since the project will have high-end residences in an area, which is currently remote and rarely patrolled.

5.13 Relocation impacts

None.

5.14 Traffic impacts, including marine and air impacts

West Bay Road will be relocated to the northern limit of the property along the existing power lines to maintain the road as a relatively high-speed corridor clear of pedestrian traffic, stoplights and stop signs. The existing alignment will become a calm, pedestrian friendly street in the new Albany community. Traffic within the community will be kept at very low speeds as the entire neighborhood is designed to be pedestrian friendly with parks, roundabouts, narrow tree lined boulevards and traffic calming features throughout.

Vessel and yacht traffic will increase in the local area as a result of the marina. Most of the traffic will be confined to the marked channel, which will access deep waters of the Atlantic west of the site. Care will be taken to make sure that traffic does not impact several dive sites, which operate west of the channel. Since waters off of the development's beach area are quite shallow with no significant coral, seagrass or rock habitats, boats will not use the shoreline of New Providence as a destination other than access for beaches. Most of the boats coming out of the marina will stay in the channel until well offshore and then proceed west towards the deep waters and reefs of the Atlantic for diving or fishing, or they will proceed to the east to reach areas of interest like the Exuma island chain.

Air traffic will increase in several ways. There has already been some increase to commercial air carriers as project planners and financial partners travel back and forth setting the stage for this development. This will intensify as construction gets underway and sales efforts are started. Since a majority of the real estate customers will be from foreign countries, air traffic will increase according to their use of the real estate product they purchase. Some increase will also come as yacht owners, crew and guests go back and forth to their vessels. Since the project is very high end, some increase in private air travel will also occur. This includes private jets and smaller aircraft, which will use facilities in Nassau such as Million Air and the Jet Center.

5.15 Economic impacts

The project is projected to create 700 permanent full-time jobs, with 400 additional estimated through other spin-off ventures. Over $400 million dollars in property taxes for the Government is projected during the first 12 years of the project resulting in an estimated $1 billion GDP. By 2017 on operations phase this number is expected to be at $67 million in annual GDP. Average home prices will range between $3-4 million, starting at $1-$2 million and going up to over $20 million (Christopher Anand, quoted in the Nassau Tribune, July 2005).

The Tavistock Group along with investors Joe Lewis, Tiger Woods and Ernie Els, will drive this project in the high-end real estate market. Members of the group are responsible for developments in the Orlando area, including Lake Nona and Isleworth. Albany is a continuation of this high end product, which will appeal to not only wealthy but also celebrity clientele. Reports in the Nassau Tribune suggest that the level of high end real estate and famous names attracted by the proven track record of the Tavistock Group will lead to a blossoming market on real estate on New Providence (Tribune, 2005).

5.16 Aesthetic and visual impacts

Due to the high-end nature of the project, visual impacts should be positive for New Providence Island and the Bahamas in general. With the re-alignment of West Bay Road, through-traffic will not be affected by the new development and the area will remain a somewhat rural roadscape. Inside the development, tree-lined streets, roundabouts and traffic calming features should lend a friendly, attractive look. A 'Portofino, Italy', look is planned for the marina village area and the existing Albany House sets the mood for the other structures with lush tropical, gardens and water features.

CULTURAL IMPACTS

5.17 Losses of archaeological, historic and Paleontological resources

Other than the ruins of the 'Fisherman's Cottage', which will be preserved, no cultural resources were located during the site survey. The previously developed nature of the site reduces the potential that any resources of cultural significance are located on the subject site.

5.18 Preservation of resources

Prior to construction, all contractors involved in site clearing will be briefed on actions required should any pottery fragments, or other artifacts which might suggest archaeological, Paleontological or cultural resources be located.

CHAPTER 6: PROPOSED MITIGATION MEASURES

Aspects of project plans, which serve as mitigating measures to impacts described in Chapter 5, are described below and depicted on figure 6.1. Full management details for conservation areas associated with the project will be outlined in the EMP, currently under preparation. The Albany developers will commit to a direct financial donation, intended to enable the establishment of the marine reserve. The exact amount of the contribution will be determined as plans for the marine reserve evolve and budgetary requirements are finalized.

6.0 Preservation Efforts

1. *Maintaining native plant species as far as possible in golf course and residential landscaping efforts.*

   The benefits of retaining existing plant specimens and utilizing native species in landscaping work include reduced requirements for fertilizer, pesticides, herbicides and irrigation and increased value for wildlife. Limiting importation of foreign raised plants, wherever possible, eliminates the potential for accidental introduction of exotic pests, microorganisms and varieties, which may, through cross-pollination, adversely affect native species. Project owners are committed to including native species in landscape plans and a plant palette will be used which maximizes value for wildlife which should attract and support viable populations of resident and migratory birds (used for all buffer areas, community landscaping and private home-sites).

Table 6-1: Sample Planting Palette

Note: the following is a partial list of recommended species, it is not intended to be exhaustive in scope. Specific planting plans will be prepared in conjunction with landscape architects to be selected.

COMMON NAME	*SCIENTIFIC NAME*	*NOTES*
TREES		
Royal Palm	*Roystonia regia*	Import limited numbers for feature species around community areas, check genetic stock.
Thatch Palm	*Thrinax morrissii*	Retain / transplant where possible, use for golf course buffers and private lots
Silver thatch palm	*Coccothrinax argentata*	Retain / transplant where possible, use for golf course buffers and private lots
Cabbage palm	*Sabal palmetto*	Retain / transplant where possible, specimen tree
Mahogany	*Sweitenia mahogoni*	Retain / transplant where possible, specimen tree with protected status
Black Olive	*Bucida buceras*	Specimen tree
Coconut palm	*Coco nucifera*	Import limited numbers for feature species, check genetic stock.

Gum elemi	*Bursera simaruba*	Retain / transplant where possible, all areas
Buttonwood	*Cococarpus erectus*	Hardy, drought tolerant, import local source, southern areas
Caribbean pine	*Pinus caribbea var. bahamensis*	Protected species, retain where possible, use for golf course buffers and private lots in northern residential areas
Pigeon plum	*Coccoloba diversifolia, C. tenuifolia, C. swartzi*	Retain / transplant where possible, wildlife value, all areas
Poisonwood	*Metopium toxiferum*	Retain / transplant where possible, wildlife value, use for golf course buffers and private lots, not private homes or community areas
Short leaf fig	*Ficus citrifolia*	
MID-STORY: SHRUBS AND SMALL TREES		
Sea grape	*Coccoloba uvifera*	Attractive, hardy, coastal tree, wildlife value, retain / transplant where possible
Coco-plum	*Chrysobalanus icaco*	Retain / transplant where possible, adaptable, common in all habitat types with good wildlife value,
Five finger	*Tababuia bahamensis*	Retain / transplant where possible
Blolly	*Guapira discolor, G. obtusata*	Protected species, retain / transplant where possible
Strongback	*Bourreria ovata*	Retain / transplant where possible, adaptable, observed in all habitat types with good wildlife value
Joe-wood	*Jacquinia keyensis*	Attractive, hardy, coastal tree, retain / transplant where possible
Geiger tree	*Cordia sebestena*	Attractive, hardy, coastal tree, use local source
Stoppers	*Eugenia spp.*	Good yard species, can tolerate shade, retain / transplant where possible, or use local source
Wild coffee	*Psychotria ligustrifolia*	Good yard species, can tolerate shade, retain / transplant where possible, or use local source
Wax myrtle	*Myrica cerifera*	Good yard species, retain / transplant where possible, or use local source, wildlife value
Bay cedar	*Suriana maritima*	Attractive, hardy, coastal tree, retain / transplant where possible use local source
GROUND COVERS, BROMELIADS AND VINES		
Wild allamanda	*Urechites lutea*	Native vine with attractive yellow flowers, use local source
Wild pine	*Tillandsia spp.*	Retain / transplant where possible
Orchids	*Bleta purpurea and Encyclia spp.*	Retain / transplant where possible
Spider lily	*Hymenocallis arenicola*	Attractive, hardy, coastal plants, retain / transplant where possible, or use local source

2. Preservation of the coastal strand system with construction setbacks.

Maintaining buffer zones between upland development and adjacent near shore areas reduces erosion of both beaches and terrestrial habitats, maintains native biodiversity and wildlife value in addition to providing attenuation of any sediment laden storm water run-off. All new beachfront lots at Albany will be located at the landward extent of the existing coastal sand strand habitat. A coastal buffer of 75 feet from the high tide line to any new construction will be adhered to and outlined in restrictive covenants for homeowners. This does not include boardwalk and dune crossovers. The sand strand and coastal dune vegetation will be maintained in an exotic free condition for the lifetime of the project.

3. Natural Areas

A 32-acre area of pineland in the northeast section of the property will be preserved as green-space, providing aesthetic appeal, wildlife value and maintaining biodiversity by including an array of representative species. This area will be managed and maintained free of exotics and will be representative of a healthy, functioning pine forest.

Private family lots (in which clearing restrictions will be enforced) separate the preserve area from the adjacent golf course, which will allow continued wildlife usage, particularly by birds, of a larger contiguous area.

In addition, a mix of golf course buffer and green-space is delineated throughout the site. These areas will serve to preserve and protect native species diversity and retain some wildlife value, despite their small size and fragmented nature. The openness will maintain flyways for birds and care will be taken to include a mix of plant species, which provide food, and strata of different heights to allow roosting and foraging.

Comments have been received regarding the proposed preserve and buffer enhancement areas. Local considerations to faunal utilization of the retained vegetated areas need to be made, particularly nesting and foraging by native and transient avian species. This document requires that native vegetation will be planted within the preserves and will also be used throughout the landscaping scheme for the development. This information is presented in order to clarify and expand this concept.

Many birds and butterflies that utilize the site or that may potentially utilize the site feed on fruits, nectar and seeds of local vegetation. Several plant species are especially important either for their abundance of forage material produced, or for the fact that a myriad of avian species will feed on their fruit. Form and structure of plant species is also a consideration to provide perching, loafing and nesting habitat. These species, as well as others that suit the ecosystem being preserved, will be those used most predominately in the proposed preserve and buffer enhancement and restoration areas. Monitoring plans will include wildlife assessment to gauge habitat use and presence of pollinators (birds, bats and insects).

Detailed floral inventory was carried out as part of baseline studies during the EIA and from this information and literature review the following list of species is especially recommended. Please note that this is not an exhaustive list of plants that will occur in the preserved areas but those highlighted as of wildlife value. Additionally some species occur naturally and will be planted in the two habitat types under consideration (pine land and coppice). The coastal dune habitat will be retained almost in entirety, hence is not considered. Cabbage palm, cattail wetland and previously disturbed habitat types are also not covered. Cabbage palm is a small 2.1 acre, area and other areas will not be retained.

Broad goals of landscaping plans are to;

- Incorporate native Bahamian species that are adapted to the local environment and used by native wildlife.
- Minimize water demanding landscape species to reduce project water and chemical requirements.
- Mimic natural edges in habitat structure such that canopy trees merge gradually with mid-size shrubs and groundcovers, avoiding abrupt transitions and allowing bird species a variety of perch heights to encourage use.
- Transplant or introduce a broad variety of species (both in form and function) for wildlife value and aesthetic appeal.
- Highlight landmark trees and attractive species (with berries and flowers) and consider seasonal flowering and fruiting cycles to provide year-round benefits.

Given that previous activities on the site include logging, clearing and gravel extraction, the proliferation of exotic plants and further impacts from wellfield use have rendered it far removed from the existing original growth pine and coppice. Goals of the habitat restoration plan are to recreate natural areas as closely as possible with consideration of expected and desired wildlife usage. Simple regrading of roads and trenches where appropriate, and removal and

maintenance of invasive, exotic plant species will achieve this goal, and positive results - a native species assemblage and use of the site by a greater diversity of wildlife species - would be expected within a five-year timeframe. In addition to this work, supplemental planting will be carried out in areas where the extent of exotic invasion is greater than 75% in any one strata. A sample plant palette is provided in this EIA.

The purpose of the conservation areas is twofold: to provide habitat for native flora and fauna and thus maintain biodiversity in accordance with goals expressed by the Government of The Bahamas and to add to the aesthetic appeal of the project. By maintaining a distinctly Bahamian presentation, it is hoped that visitors and guests will come to appreciate the natural appeal of the islands and wish to see it recreated in other locales. No specific activities, other than habitat management work, are planned for these areas at the current time. Should demand be expressed for pedestrian nature tours, these may be established at a later date.

4. Monitoring and maintaining beach areas.

Following completion of the marina access channel, a program of annual monitoring will commence, quantifying the extent of shoreline width both within the project boundaries and on adjacent beaches, extending for a length of 500m (1,500 lf) both east and west of the site. Should erosion problems be observed, which coastal engineers determine are attributable to project construction, a planned schedule of beach re-nourishment will be developed and implemented at project owners expense. No such problems are anticipated.
The marina is a central and fundamental component of the overall project. While it is not located in a natural harbour, it is as suitable as any other marina site located on the island of New Providence, in the sense that it requires inland dredging to create the basin and entrance channel, construction of entrance channels and also requires consideration of its impacts on adjacent shorelines. Detailed analysis of coastal dynamics has been undertaken to ensure both construction and future management can proceed with the least impact to the environmental and greatest benefit to the residents and visitors to New Providence.

The existing beaches between Stuart Cove and Adelaide Creek channel have eroded historically, and continue to experience erosion today. The 1942 map (Figures 3A and 3B, Appendix VII) shows the original shoreline location in relation to the upland properties. Note the substantial difference between the historical shoreline, and that existing today. In the next decade, the property owners adjoining this shoreline will likely be required to nourish this stretch of beach to

maintain the shoreline in its current location. This nourishment will result in the creation of a man-made beach system.

The Albany Project team is proposing to include this nourishment project as part of the overall Albany Development. This nourishment will create a stable shoreline for Adelaide and other shoreline residents (including Albany residents), that will be maintained by a long-term maintenance program to ensure long-term stability for the residents in this area, as well as visitors. In addition, adding sand to this system will enhance the buffer between shoreline residents and the destructive forces of future hurricanes and other storm events. On this issue, it should be noted that recent investigations carried out within the Caribbean and by NOAA, point to our entry into a multi-decadal increase in the intensity and frequency of hurricane events.

The following conclusions are provided to confirm the results of the detailed modeling, analyses and field observations conducted by the Albany Project Team:

1. There is sand movement in this beach system between Adelaide Creek west to Stuart Cove and beyond. Over time, this beach has been slowly eroding, with or without the presence of the proposed Albany Project entrance channel.

2. The Albany Project includes the proposal to create an entrance channel, and to divide the beach system into two separate cells. The two beach cells (or beach systems) are proposed as follows- the firest is the extension from Adelaide Creek to the east edge of the Albany entrance channel, and the second is the west edge of the Albany entrance channel west to Stuart Cove's channel.
3. Particularly during storm events, sand will naturally migrate into the Albany entrance channel (requiring periodic dredging). While the Albany Project will create a man-made system that must be managed, it effectively will result in the reduction or controlling of the existing longer-term erosion that has been ongoing.

4. Numerical modeling and field investigations were conducted, and these results indicate nourishing the beach (in both cells), which is proposed in tandem with the installation of stabilizing structures such as groins, will create a managed stable beach environment. That beach environment will only be susceptible primarily to substantial erosion during major storm events. As a result fo the 'pre-nourishment', nourishment events will be much less frequent than originally proposed (previously thought to be 3 to 4 years).

Therefore, in order to ensure long-term shoreline/beach stability, a mitigation-type bond in the order of $1million is proposed. This bond will be established in order to fund future maitenance events, as required by natural erosion, major storm events, and the combination of the two. These maintenance events will return the beach to its existing, post-nourishment condition. Ultimately, this funding source will ensure the beaches in this area, between Albany and Adelaide Creek, will be maintained for the long-term enjoyment of residents.

Summary of Updated Information on Erosion and Nourishment Initiative:

- There is historical evidence of a creek entrance at the location planned for the Albany marina entrance. This dates back to the 1920's and sets a strong precedent for a 2-cell beach system at this very spot.
- Historical mapping of the shoreline (HWL) indicates that over the past 60 years, the shoreline has been eroding at a rate of between 0.5 and 1.0 ft. per year.
- This erosion has been worst in the vicinity of the Adelaide Creek entrance.
- Overview aerial photography shows a "pathway" of alongshore sand movement in a band along the shoreline. At the western end of the cell, some of this sand makes its way around into Clifton Bay, while the remainder (perhaps the majority) goes over the shelf edge and is lost forever to the coastal system.
- The grouping of the Albany entrance jetties, the proposed Adelaide beach nourishment and the proposed shore retention structures west of the Adelaide Creek entrance, combine to make a managed, 2-cell beach system. This is intended to halt the historical and ongoing erosion along this stretch of shoreline and to provide a widened beach for the residents of Adelaide.
- Initially, the beach will be widened through a sand nourishment initiative.
- It should also be noted that the beach in front of the Albany project will be nourished, therefore providing both a wider beach to this facility and a source of sand to the more westerly properties.
- Subsequently, any sand that accumulates against the jetties (for the majority of the time, this will be against the eastern jetty) will be bypassed to the other (western) side of the entrance.
- The bypassing program is therefore intended to ensure the continual supply and movement of sand to the beach zones west of the Albany project. During times of westerly waves, the bypassing program may require the movement of sand from the west side of the jetties to the east.
- Based on computer simulations of shoreline change predictions and from field observations of the existing breakwater offshore the Mailis property, it is estimated that over a 5 year period, approximately 10,000 to 20,000 cubic yards of sand will need to be bypassed. This could

also be carried out on an annual basis if deemed to be more effective (2,000 to 4,000 cubic yards in a year), or, for longer, less frequent periods if found to be more appropriate.

- The actual details of the bypassing program will be advised by beach profile monitoring results. These results, in an interpreted form, will be sent to BEST for their files and information. Decisions as to the actual required frequency of bypassing, and direction of sand placement, etc., will be advised by the monitoring. This will ensure that beach changes that are triggered by storm events will be accounted for in the management of this exercise. Further, this will ensure that a completely transparent process is adhered to and that BEST will be kept fully up to date with the bypassing schedules. Beach profile monitoring will begin shortly.
- Based on present commercial rates of dredging, and on the use of hired or own equipment, the bond which is to be posted by the developers should provide the government with the surety that dredging can be funded for the next 20 to 40 years.

5. Commitment to pursue Blue Flag Certification for clean marina operation.

The Blue Flag Campaign is a voluntary program that certifies beaches and marinas that have demonstrated good environmental practices. The program promotes integrated environmental management and is owned and operated by the Foundation for Environmental Education (FEE), a non-profit NGO located in Denmark, which also provides international coordination. Internationally, Blue Flag is supported by the World Tourism Organization (WTO), and the United Nations Environmental Program (UNEP), among others. Since its inception in France in 1987, more than 3000 facilities in over 24 countries have qualified for Blue Flag status.

In the Caribbean, the program is coordinated by a consortium that includes the Caribbean Tourism Organization (CTO), the Caribbean Conservation Association (CCA) and the Caribbean Alliance for Sustainable Tourism (CAST). To achieve certification, candidate facilities must meet and maintain standards in the following four criteria;

i) Water quality

- Monitor health of adjacent marine resources
- Keep untreated sewage and industrial effluent from entering the marina basin
- Monitor water quality to meet established standards

ii) Environmental education

- Erect signs about the Blue Flag campaign
- Post rules of conduct for beach use

- Display maps of the beach and marina areas
- Post water quality data where they can be publicly viewed
- Provide public notification of nearby environmentally sensitive areas (such as mangroves, wetlands, protected areas, and so forth), and promote responsible management of the areas
- Host a minimum of five (5) public awareness activities per year to help educate people on environmental issues

iii) Environmental management

- Establishing a beach and marina management committee that conducts regular environmental audits of the facility
- Making waste bins and recycling bins (where possible) available
- Keeping the facility clean and tidy
- Providing changing rooms and sanitary facilities
- Keeping buildings in good condition

iv) To meet safety and service standards, properties must:

- Make first aid and lifesaving equipment available
- Provide access to beach and sanitary facilities for disabled persons
- Provide an adequate supply of safe drinking water

This program is similar in scope to the Clean Marina Program operated by the Florida Department of Environmental Protection. A schedule of steps towards obtaining certification will be outlined in the Environmental Management Plan for the project, which itself will be finalized pending complete project approvals. The marina management team is committed to submitting an application for Blue Flag certification within 1 year of project opening. All plans and management protocols adopted, as will be presented in the EMP, will bear this in mind.

6) Restoration and preservation of on-site cultural resources (ruined fisherman's house)

Incorporating local character and a Bahamian feel to planning and architecture is demonstrated by the extensive planning efforts and research thus far. In this regard the ruined and abandoned fisherman's cottage, will be preserved and incorporated into community amenities, enhanced by explanatory signage.

6.1 Education efforts

Environmental education efforts are planned both during and post construction of the Albany project. All construction personnel will be provided with the information, skills and training needed to carry out aspects of their jobs that may have an environmental impact. For example, response and equipment operation in emergency situations such as fuel or other hazardous material spills, storms or fires and installation and maintenance of sediment control equipment.

Following opening of the project, efforts fall into four main areas;

- Posting of informational signage (developed in coordination with BREEF) and including Bahamas fisheries regulations at the marina.
- Installing cultural education signage at the fisherman's house historic site.
- Providing environmental educational materials for homeowners in deed restrictions / homeowners packets.
- Exploring the potential for group visits (schools, special interest groups) to the historic site.

6.2 Habitat Conservation

Three categories of conservation area have been established and acreages of each shown in Table 5.3 (page 79). Project plans provided in Appendix I illustrate the designations. Conservation areas are large, contiguous preserves that will be cleared of exotic vegetation and protected from direct impacts of the development. Natural buffers are narrow or small contiguous areas that will be cleared of exotic vegetation and may be re-planted. This designation describes the golf course buffers and corridor areas within the residential portion of the development. Green-space describes an area that may be cleared and replanted but will remain as pervious natural area post-development. Project developers are committed to conserving as much of the site as possible as pervious, undeveloped land. In this regard limits to allowed clearing for residential lots will be imposed. For each residential lot, clearing limits will be outlined in homeowner's documents and strictly enforced, such that at least 35% of every lot must remain naturally vegetated or landscaped. It is anticipated at least 40% of "natural" area remain in the finished product, but it is important to remember most of the "natural" area have been forested, strip mined and/or have been ditched for water extraction. Additionally, waterfront lots will have a minimum setback requirement of 60 feet from high water mark, which will strike a safe balance between preserving the integrity of the seaward aspect of the beach ridge and allowing owners a reasonable proximity to the sea.

Chapter 4 notes the number of exotic and nuisance vegetation species present on the site in the existing condition. Clearing of well-field trenches, roads and trails has exacerbated the spread of invasive species and reduced habitat quality throughout the site. All nuisance and exotic species will be removed and the

project will be maintained exotic-free as part of the ongoing landscape plan. A mix of mechanical and hand clearing will be used. Some discrete and localized application of herbicides (such as Garlon) may be used on Casuarina stumps to kill the trees and prevent re-growth. All removed vegetation will be mulched on-site, wherever possible, the material stockpiled and potentially used for sediment control and longer term, in landscaping beds where use of mulch is shown to reduce irrigation needs and herbicide use by restricting weed germination. Currently the Department of Environmental Health Services is reviewing the waste management plan for approval. Upon receipt, the approval letter will be forwarded to BEST.

Re-vegetation and maintenance will be performed following exotic plant removal. Species used in restoration, will be chosen from a palette of native plants, (Table 6-1) and will be based on surrounding natural habitat type.

Creation of the access channel is expected to provide additional substrate for colonization by seagrasses where, in the existing condition, benthic areas are comprised mostly of sand and patchy turf and calcareous algae. The channel feature will result in reduced current and wave action and should allow species such as *Thallassia testudinum* to root and colonize the area. The rocky sides of the deep channel will also provide additional surface area and refuge for sessile marine invertebrates such as small corals and sponges and reef fish. Additionally, the riprap jetties will provide surface area for colonization by a variety of sessile marina flora and fauna and in turn a feeding and refuge for fish and other marine vertebrates and invertebrates.

In coordination with local conservation groups such as BREEF, project owners will explore suitable options and locations for installation of fabricated concrete “reef-balls” or similar artificial reef materials. These structures provide additional habitat for marine species in addition to serving as interesting and educational snorkel sites.

6.3 Construction Issues

1) Curtain Wall Installation to Eliminate Saltwater Intrusion

Extensive hydrogeologic study has shown that marina construction is unlikely to negatively affect groundwater resources in the vicinity. To eliminate any possibility of saltwater intrusion due to construction activities, a curtain wall around the marina will be installed. Results of the analysis and details of the proposed plan are presented in Appendix III.

2) Wastewater Treatment

To eliminate the potential for eutrophication of near shore waters, the project entails provision of treatment for all sewage at a new, off-site sewage treatment plant. Construction of septic systems is not proposed.

3) Potable and Irrigation Water Supply

Provision of potable water will be provided by wellfield extraction by The New Providence Development Company. For irrigation needs, a combination of treated effluent from the new sewage treatment plant and a planned Reverse Osmosis system will meet anticipated demand.

4) Turbidity Monitoring

While marina basin excavation will be closed to the marine environment, dredging of the access channel is expected to result in suspended sediment, which may affect marine resources in the vicinity of the project site. To ameliorate this unavoidable impact best effort will be made during marine construction work to contain and control suspended material through the use of weighted, floating turbidity curtains.

5) Upland Sediment Control

Natural areas to remain on-site include the 32-acre preserve in the northeastern corner of the property and 105.82 acres of golf course buffers and community green space in addition to the protected coastal sand strand. To protect these areas from the dust and water-borne debris that may be generated by land-clearing work (and to delineate and protect designated preserves from inadvertent encroachment) they will be surveyed in the field and sediment curtains installed prior to the commencement of any work. These will be monitored and maintained for the duration of construction activities. In addition, staff will coordinate closely with construction crews prior to the start of work to phase clearing plans such that the minimum area is cleared sufficient to allow planned work.

6) Marina Construction

The needs for blasting and final methods of excavation are typically determined in the field based on conditions encountered such as hardness and depth of rock etc. The following notes give, in an outline format, general steps that will be taken if blasting is used to aid and hasten excavation. Please note that this work will be carried out in isolation from tidal connection. Pre-blast shocks should not be needed as no wildlife will be affected by work carried out in this manner.

1. A 2-3 foot wide trench will be excavated to a depth of 18 feet surrounding the entire circumference of the proposed marina basin.
2. Seismic monitors will be set up to monitor the work.
3. The blasting pattern will be adjusted based on the size of final material required.
4. Blasted material will be lifted onto a 20 yard articulated truck using a 5 yard excavator. It will be hauled to its final location for use as fill on the site.
5. Once all excavation is completed the basin will be opened to the sea and turbidity curtains will be set up to minimize transport of suspended sediment.

Offshore, blasting may be utilized to soften the rock in the access channel prior to excavation. In this case pre-blast shocks will be carried out to ensure that errant marine life leaves the area to the extent possible. If excavation can be accomplished by conventional techniques, then it is anticipated that three 150,000 lb Class excavators will be utilized to load 35 ton off-road trucks which will haul excavated material to the development sites. If this technique is employed vibration impact to surrounding properties will be minimal.

Coral relocation will be carried out by qualified biologists prior to the dredging of the marina entrance channel. The relocation efforts will be subject to field based judgment in the appropriateness of transplanting a given colony and a pre-defined plan will not be provided. Reporting and on-going monitoring will document the success of both the initial work and longer term achievements.

6.4 General

1) Restrictive Covenants

Planning efforts for the Albany project have included extensive design work by the firm Duany Plater-Zybek. Research was undertaken to develop plans which combine aspects of the concept of new-urbanism in land planning within a distinctly Bahamian context, resulting in a strict set of design specifications for residences and structures. The Albany project is unique in The Bahamas in the level of pre-project planning work to ensure a look and feel to the development which is indicative of the high-end and exclusive feel desired by project owners. To achieve implementation of these efforts, a set of restrictive covenants will be provided to all future homeowners, outlining not only architectural and structural details but also environmental aspects pertaining to homes and lots. These include (but are not limited to): clearing limits to maintain at least 35% of the existing native species habitat within yards and gardens, planting palettes which include native species, building specifications which serve to maximize environmental efficiency of homes in areas such as power, chemical and water savings and sustainable

building and home maintenance approaches. In this way all buildings will be constructed to the highest of current standards. Details are provided in Appendix IV.

Restrictive covenants will be completed following receipt of all project Governmental approvals to avoid confusion, duplication of effort and unnecessary expense.

6.5 Community and Socio-economic Issues

1) Employment Opportunities and Community Projects

As detailed in Section 5.15, the project is expected to provide approximately 1,100 new jobs for Bahamians during and post-construction as well as expanding needs for goods and services in the region and contributing to the Governmental tax base through import and other duties associated with goods required. Long term, in line with other similar scaled projects, developers will actively explore opportunities to provide on-going financial aid, through such means as small grants, scholarships or intern programs, to adjacent communities. Project owners are committed to give back to both the country and community. Developers are additionally working with adjacent projects in the region of western New Providence that, in coordination with the Government of the Bahamas, plan to re-develop both down town Nassau and the Clifton area. Owners and associated consultants have participated, and will continue to coordinate, with Government parties and consultants to plan work in a participatory context. Albany is but one component of larger plans and owners are committed to open collaboration and assistance wherever possible to result in a modern, efficient and financially stable New Providence that retains its status as a premier tourist destination in the wider Caribbean.

Community Services

Albany will be a second and third home community and therefore will not have the same demands on the social infrastructure of New Providence as most primary residential communities. Should the need arise for schooling of children in the community there are sufficient school opportunities provided by the Lyford Cay School (3 miles away), Unicorn Village School (6 miles away) and other schools on the island such as St. Andrew's school (18 miles away).
In regards to security, Albany will have its own security force which will provide security to the community 24 hours a day, 7 days a week. In the event the Royal Bahamas Police Force is required to provide additional services there are station locations at Lyford Cay shopping centre (3 miles), the Nassau International Airport (5 miles) and the developer will work with the Police to establish a substation just 1.5 miles away in Adelaide. The security force will work closely with the police to address any security and privacy needs that the residents of Albany will require.

In the event that the residents of Albany will require emergency medical care there are 2 major hospitals on the island; Doctor's Hospital (Private Care) and Princess Margaret Hospital (Government run). Both hospitals are approximately 15 miles from the development and have adequate facilities to address any medical requirements for the residents of Albany. In addition, there is the Lyford Cay Hospital which is operated by two local doctors who reside in Lyford Cay and are on call for any emergencies and hold daily clinics for non-emergency situations for the treatment of any illnesses.

It should also be noted that many of the residents will likely arrange for private air transport to the United States, if time permits in an emergency situation.

Fire protection is provided by the Fire Department of the Police Force and the nearest location is at the Nassau International Airport (5 miles). In addition, the developer will be establishing a first response fire program with a fire truck and the ability to establish water connections to hydrants throughout the community. This will be manned by trained full time staff of the Developer's security detail.
Socio-economic analysis

Global Insight has conducted a thorough economic impact analysis of the Park Ridge development plan. In this regard, we are pleased to submit this Executive Summary of the project. In summary, the entire project will yield the following economic impacts.

- Over a 12 year period, construction will inject $417 million into Bahamas GDP and nearly $188 million in taxes, generated primarily from import taxes and initial land transfer stamp tax.
- By the year 2017, the ongoing operations of the project will contribute $26 million, annually, to GDP.
- The project will generate nearly 493 permanent Bahamian jobs at full operation in 12 years. At the height of construction the development will employ approximately 1600 construction jobs.
- Total taxes over a twelve-year period from both construction and operations will tally $318 million.
- We believe these figures represent an accurate assessment of the jobs, taxes and GDP that will be generated by the construction of operation of the project. The model employed has been developed based on detailed Department of Statistics industry information and has been recently refined.

2) Beach Access Issues

Through a series of on-going meetings and coordination with the Government of The Bahamas, significant mitigative financial contribution has been pledged to the Government towards beach access for residents of New Providence.

Figure 6.1: Mitigation Measures Summarized

- Employment opportunities and economic benefits
- Beach access fund for residents of New Providence
- Wastewater treatment provisions
- Combination of extraction for potable water, use of reclaimed and RO for irrigation needs
- Restrictive covenants for

- Habitat Conservation and Restoration: through buffers, green space and preserve

- Native plant palette in landscaping to maintain biodiversity and promote wildlife usage
- Turbidity control during construction
- Installation of curtain wall to prevent saltwater intrusion
- Removal of all exotic plants and maintenance of site exotic-free
- Blue Flag Certification for marina
- Monitoring and maintenance of beaches
- Reef Balls plus access channel and jetty structures increased habitat for marine life
- Coastal strand preserve / buffer zone
- Sediment control methods employed during construction

CHAPTER 7: EVALUATION OF THE SIGNIFICANCE OF RESIDUAL IMPACTS

Residual impacts are those, which remain after consideration of all proposed mitigation measures for direct environmental impacts of the project. While an extensive and thorough series of mitigative actions and aspects of construction and project design have been incorporated to protect and manage the natural environment at Albany, there remain those unquantifiable and cumulative impacts to biological resources which cannot be fully accounted for or mitigated against. These include:

- Habitat loss which may affect migratory species of birds or fauna and flora not observed on-site during the survey period.
- Cumulative impacts which may affect the Bahamas as a whole such as the increased demand on natural resources such as vulnerable food resources such as grouper, conch and lobster.
- Increased demand for goods and services, including fuel, water and waste disposal needs, generated by future residents of the project.
- The potential for accidental spills, fires or vessel groundings.
- Low level increases in nutrient and chemical additions to groundwater resources and near shore marina habitats.

It is the opinion of report authors that the project development team at Albany has incorporated all reasonable mitigation measures such as to render these residual impacts insignificant. Through adherence to an on-going Environmental Management Plan, hitherto unforeseen negative impacts can be duly recognized and addressed. Education efforts focused on construction personnel and future residents as well as the level of sustainability incorporated into construction details, ameliorates many of the residual concerns.

CHAPTER 8: PUBLIC CONSULTATION

The detailed planning efforts undertaken at Albany have been made in a wholly participatory context as exemplified by the kick-off design charrette, held on-site and hosted by the design firm Duany Plater-Zybek over a week in the early part of 2005. This planning workshop introduced project plans and included a variety of open sessions designed to shape the development and determine its role in the growth of the Bahamas. The developer and land planners extended invitations to the following categories of people; Architects, land planners, builders, designers and decorators, developers, local contractors, landscape companies, lawyers, Members of Parliament, representatives of all related departments of the Ministry of Works, Office of the Prime Minister, members of the Media, owners of adjacent properties, residents in communities in the Western District of New Providence, Realtors, Doctors, Lawyers, Dive Operators, Biologists, Engineers, Boat Captains, Private Club operators and the attendance rate was very high with over 120 persons participating in the overall exercise..

Sessions included:

- Introduction to the charrette concept by Andres Duany.
- Technical Meeting / Civil Design / Engineering Discussions.
- Development Amenities Discussion.
- Discussion with Architects, Contractors, Developers - Design.
- Pin Up and Review by interested parties in initial design ideas.

In developing the Master Plan the input of all attendees was critical in ensuring that the plan proposed was the most acceptable plan according to a very broad spectrum of input. Where there was an initial desire to incorporate a canal system throughout the development, consultation with a number of attendees resulted in the eradication of any such plans. Concerns were also expressed about the original density proposal of the development and as a result the density was greatly reduced to allay such concerns. The dive operators were consulted on the features of a marina and to address any concerns that the channel orientation would have on their operations which led to a change in the orientation and promotion of open dialogue with the operators in the design and construction process. Representatives of the Bahamas Reef Environment Education Foundation (BREEF) were also included in ongoing discussions about the Marina and their concern was the possible strain on the natural resources by non-Bahamian vessels through non-observance of catch restrictions and non-adherence to no take seasons on various species. In response to this the developer has agreed to work with BREEF to ensure awareness of all rules and regulations in relation to fishing in The Bahamas and to establish a location in the Marina where boaters and residents can obtain all relevant information on such regulations. The developer will promote the general awareness of bodies such as BREEF and the Bahamas National Trust

which can also lead to substantial donations by the residents to such bodies to assist in the furtherance of their objectives.

In addition to the Design Charette, a representative of the developer has been actively discussing the proposed project with persons in nearby Adelaide Village including residents who own property on the beach, fishermen, farmers, restaurant owners, and doctors. These discussions culminated in an Adelaide Town Meeting which was arranged by residents in Adelaide and included the Member of Parliament for the constituency, Michael Halkitis, M.P. The meeting was very well attended and the plans were well received. There was resounding support for the development plans, and for the Adelaide enhancement project that form a part of the off site development plans for the adjacent areas. The only concern that was voiced was over the proposed Marine Park that is slated for the area, as local fishermen were opposed to any restrictions that would affect their ability to make a living.
The developer stands ready to hold any other meetings and consultation with such public bodies that the Office of the Prime Minister may direct.

It should be noted that leading the land planning Charette was the developer under the guidance of the renowned firm Duany Plater-Zyberk. Since its founding in 1980, Duany Plater-Zyberk & Company has completed designs for over 250 new and existing communities. This work has exerted a major influence on the practice and direction of urban planning in the United States. DPZ's projects have received numerous awards, including two National AIA Awards and two Governor's Urban Design Awards for Excellence. The firm's early project of Seaside, Florida, was the first authentic new town to be built successfully in the United States in over fifty years. In 1989, *Time Magazine* selected Seaside as one of the 10 "Best of the Decade" achievements in the field of design. The firm has been featured in other national media such as NBC News and ABC News, as well as *Newsweek*, the *New York Times*, the *Washington Post*, and the *New Yorker*.

A significant aspect of DPZ's work is its innovative use of planning regulations, including the urban and architectural codes that accompany each design. Tailored to the individual project, the codes address the manner in which buildings are formed and located to ensure that they create useful and distinctive public spaces. Local architectural traditions and building techniques are also codified within the regulations. The firm's method of integrating master plans with project-specific design codes and regulations is currently being applied to sites ranging from 10 to over 500,000 acres throughout the United States and abroad, in North America, South America, Europe, Asia, and Australia.

Years of experience in the town planning business have taught DPZ the value of the charette process. The charrette brings together all interested parties who are invited to offer direction and feedback while the plan is being created. Through presentations, meetings and pin-up sessions, the charrette team is

able to keep the community continually informed as the plan unfolds. The DPZ charrette has become well known throughout the industry as an extremely effective means of transforming vision into reality.

Additionally, meetings and consultations with the Office of the Prime Minister and various other Government departments (including but not limited to the Ports Authority, Water and Sewerage Corporation, and the Ministry of Works) as well as utilities providers (BEC, Batelco) have been an on-going component of project development plans. Input from local residents, neighbors to the project and NGO's such as BREEF, has also been sought. Developers have coordinated with private consultants to the Office of the Prime Minister regarding regional plans for the Clifton Heritage Park and port development. Newspaper articles on the project have been published in the widely read *Nassau Tribune*.

CHAPTER 9: ENVIRONMENTAL MANAGEMENT PLAN

Background

This section outlines items and issues included in the Environmental Management Planning guidelines for the Albany Project. A working draft of the plan is currently in the review and comment phase. The comprehensive nature of the proposed plan is such that until final design is achieved the document will remain draft in scope. Herein, items for inclusion and chapter headings are presented.

Goals of the plan are to;

1. Follow a workable construction timeline such that environmental objectives can be met efficiently.
2. Streamline communication efforts.
3. Respond quickly to unforeseen events or issues that may have environmental significance.
4. Monitor construction efforts to provide feedback and follow-up regarding issues identified in the environmental impact assessment (EIA).
5. Fulfill all commitments as made in the EIA, including marina management guidelines and restrictive covenants.

Environmental Management Team:

The Environmental Impact Assessment report (EIA) for Albany has been prepared by a collaborative working group of coastal scientists and engineers, project owners, neighbors and local residents, marine and terrestrial biologists, hydrogeologists and land-use planners. The Management Team will continue the collaborative approach while incorporating a clear chain of authority and communication to ensure that all environmental provisions and mitigation measures outlined in the EIA are met satisfactorily.

Project Owners
Park Ridge Securities Corp.
The Tavistock Group

Environmental Lead
Turrell, Hall & Associates, Inc.

Marina Construction
To be determined by bid process

Terrestrial Construction
To be determined by bid process

Golf Course Operations and Landscaping
To be determined by bid process

Site Engineers
Integrated Building Services Limited (IBS)

Chapter 1:- Introduction

The purpose, scope and content of the Environmental Management Plan will be outlined in Chapter1.

Chapter 2: Project Overview

This section will present an overview of the planned project as approved, together with a working timeline and an organizational chart. Additionally potential impacts, accidents or malfunctions will be discussed, along with goals for construction safety.

Chapter 3: - Applicable Environmental Regulations; Local, National and International

This chapter provides a list of applicable regulations that may have a bearing on the project, along with government agencies and entities with authority and input.

Chapter 4: - Description of Existing Natural Communities, Environmental Impacts and Mitigation Measures

A description of terrestrial and marine habitat impacts, preservation and mitigation will be given. An education plan and construction plan will be outlined as well for protection of resources. Conservation of any rare species and areas of special concern will also be discussed in Chapter 4.

Chapter 5:- Construction and Operation Management Activities

Various plans will be outlined and discussed for protection measures during construction activities. The plans outlined include Erosion and Sediment Control; Beach Enhancement, Re-nourishment and Monitoring; Access channel Dredging; Coral Relocation; Summary and Sequencing of Marine Construction Components; Noise and Odour Control; and Waste Management.

Chapter 6:- Emergency and Hazards Management

All possible emergency situations regarding hazardous materials onsite, and acts of nature or sabotage are described, along with the Best Management Practices (BMPs). Categories discussed include Personal Protective Equipment (PPE), Hazardous Material Management, Emergency Spills of Hazardous Matierals, Marine and Upland Spills, Explosions of Hazardous Materials, Storm/Flood Planning, Fire and Safety, Acts of God/Terrorism/Sabotage and Reporting.

Chapter 7: Marina Management

This section will present a comprehensive Marina Management Plan, to include provision for spills and emergencies and a plan and timeline to achieve Blue Flag certification. In addition, proposed location and content of educational materials will be presented.

Chapter 8: Landscape and Golf Course Management

A summary of techniques and methods to be employed in the operation of an environmentally friendly golf course and associated landscape provisions will be outlined. Topics of discussion will include plan Goals; Recommended Plant Species; Exotic Plant Species; and BMPs for Maintenance, Chemical and Water Usage.

Chapter 9:- Environmental Monitoring Protocol

Chapter 9 outlines recommended monitoring programs needed for construction activities, water quality, habitats, groundwater, shoreline profiles, fuel supplies and waste production. In addition, reporting sheets for terrestrial and marine monitoring are included.

Chapter 10:- Work Plan

The work plan includes a Responsible Personnel Flow Chart with contact information; Training Requirements and Public Awareness; a Health and Safety Plan; Incident Reporting and Documentation Procedures; and EMP Review, Public Input and Mechanisms for Feedback and Adjustment.

CHAPTER 10: CONCLUSIONS

The Albany project is a significant, but expertly planned development on 570 acres of land on the southwestern coast of New Providence Island. The project was designed by a team of planners, engineers, scientists and biologists and every aspect of the project was analyzed for potential impacts and possible improvements. The subject property has 3,200 feet of beachfront and is bisected by South West Bay Road, which will be relocated to the northern boundary of the property as a part of the proposed project. Five hundred acres of the project are north of the existing road while 70 acres lie to the south of it, along the coastline and beach.

The project proposes an 18-hole championship golf course, single and multi family residential units, commercial/retail space, an exclusive beach club and a new marina. With the exception of the entrance channel into the marina, all of the proposed impacts will occur on land, which has already been impacted by man.

The golf course and most of the residential development will occur on the 500 acres north the existing South West Bay Road. This area is predominantly pinelands, which have been historically logged and, in some areas, mined for aggregate. The area is currently crisscrossed with a series of long, shallow trenches which are used for fresh water withdrawals. As described, the proposed project impacts will occur on lands already significantly altered by man. This historical alteration has reduced the biodiversity of both plants and animals and has opened the area up for invasion by exotic plant species such as casuarina.

The Albany Beach Club and marina will occur on the 70 acres of land south of the existing road, along with single-family beachfront lots and a marina village, which will have multi family and commercial/retail components. This area is a private estate which has a series of trails constructed through the grounds, a yacht basin which was never connected to the sea and a number of structures including a great house which will serve as the beach club. Most of the vegetation within this project area has been previously impacted with the exception of the coastal strand, which will be mostly preserved under the current plan. A historical structure exists, which will be preserved and featured as a park. Significant study and peer review was focused on impacts of the marina and entrance channel to the coastal system and to the groundwater. These studies resulted in a design, which will minimize impacts and protect the area beaches, offshore resources and the groundwater of the site.

The project proposes to be proactive with the environment in a number of ways. Changes in the site plan were made to eliminate 40 acres of lakes in favor of retaining natural areas. The site plan was also changed to allow for natural buffers in between golf holes in lieu of entirely clearing these areas for

replanting. The project has made a commitment to use native plants in the landscaping, to eliminate all exotic plant species and to keep the property exotic free. The marina will be constructed with safeguards including turbidity control measures with daily monitoring. The marina will install state of the art fueling and sewage pumpout facilities and will pursue the "Blue Flag" international certification which covers a wide array of environmentally friendly practices for not only marina operations, but also for the beach and coastal management. The project owners have committed significant financial resources to the Bahamas government to help enhance and protect public beach access on New Providence. An environmental management plan will be developed for the entire project during development to ensure that good ecological practices continue, are monitored and evolve with the project through time.

The Albany project will create hundreds of new jobs and will significantly add to the economy of New Providence Island and to the Bahamas as a whole. The celebrities associated with the project, namely Tiger Woods and Ernie Els, will bring international name recognition to all of the Bahamas as Albany is promoted. This will, in turn, promote tourism to the country well beyond the boarders of the project. There is a noted shortage of mega yacht slips in Florida and in the Bahamas which the marina will address, attracting world class private yachts with important visitors, some of whom will be exposed to the Bahamas for the first time. These elements should also have positive effects on the county as a whole.

Overall, it is the opinion of the authors of this EIA, that the benefits of the Albany project to the Bahamas far outweigh the impacts and that every effort has been made by the owners to properly manage the environmental aspects of the project.