

# **CENTRAL PLANNING AUTHORITY'S**

## **AGGREGATE POLICY**

**(As Approved by Cabinet on 26 July 2004)**



**Balancing The Need for Development  
With Preservation of the Natural Environment**

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# **CPA POLICY FOR THE REVIEW AND LICENSING OF AGGREGATE OPERATIONS**

## **STATEMENT OF PURPOSE:**

TO REDUCE ENVIRONMENTAL AND NATURAL RESOURCE LOSS ASSOCIATED WITH QUARRY OPERATIONS WHILST ENSURING THE CONTINUING AVAILABILITY OF QUALITY CONSTRUCTION AGGREGATE AND FILL MATERIAL FOR FUTURE DEVELOPMENT AT A REASONABLE COST.

### **1. Definitions**

- A Quarry** means an excavation producing aggregate and fill material for use at another location. Developments excavating to obtain fill or for landscaping purposes are not included in these policies as long as the excavated material is not taken off of the development site. Excavation for beach sand is not included.
  
- B Aggregate Reserves Quantity** means the amount of aggregate remaining to be extracted within the boundary of a licensed quarry. Aggregate produced by developments and used on site, and excavation of old, shallow quarries is not included in the calculation of aggregate reserves.
  
- C Aggregate Advisory Committee (AAC)** means the government inter-agency technical group comprised of PWD, Planning, DOE and Water Authority for the purpose of advising the Central Planning Authority and Cabinet on issues related to aggregate production and supply. The AAC will not replace advice from any other Government agency.
  
- D Closure Plan** means the rehabilitation of the quarry site.
  
- E Aggregate** means both aggregate and fill material.
  
- F Excavation** means the unearthing of land to obtain fill or aggregate for use on the same site.

### **2. Strategies**

#### **A. Facilitate a long-term aggregate importation strategy..**

- i) Compile a database of quantities and types of aggregate imported, aggregate sources, landed costs, and final disposition of aggregate if possible.
  
- ii) Plan for future establishment of aggregate importation docking facility of an appropriate design and location.

**B. Locate quarries in areas with reduced risk of environmental impacts.**

- i) Apply LIS based Constraints Analysis Screening to determine the suitability of proposed quarry location to reduce potential impacts to the natural environment.
  - a) Prohibit excavation on lands with exceptional environmental or cultural resources.
  - b) Consideration shall be given to locations of lesser environmental value discouraging excavation in environmentally sensitive areas, primary habitat, and habitat for threatened species.
  - c) Preference shall be given to locations with higher elevation, thin peat overburden, and high quality aggregate.
- ii) Minimise excavation in fresh water lenses.
  - a) Excavation above the fresh water lenses, and any other excavation with the potential of negatively impacting groundwater resources will be at the discretion of The Water Authority. (Illustration 1: locations of groundwater resources defined on 1990 hydrogeological survey map).
- iii) Continue existing considerations for other factors including compatibility with adjacent land use, Development Plan, and road use.

**3. Optimize quarry productivity**

- A. Permit quarry excavation deeper than the current limit of 14 feet below mean sea level under appropriate conditions:
  - (1) The excavated pit will never be connected to the sea.
  - (2) A pilot study for the specific depth and for an equivalent geological strata & ecological community type indicates no negative impacts to the surrounding environment.
  - (3) Depth of excavation is: (1) recommended by the Aggregate Advisory Committee (AAC) and (2) approved by Water Authority.
- B. Require quarries to excavate to the maximum depth permitted in their license.

**4. Manage the number of quarries**

- A. **Manage the number of licensed** quarries basing the approvals for new quarries on the principle of supply and demand, and as a tool for growth management.
  - (1) Establish threshold quantities for sufficient licensed aggregate reserves. No new quarries approved until the combined total reserves of all licensed

quarries reach a quantity equal to a 5-year supply (5 million cubic yards). The maximum total quantity licensed will be a 12-year supply.

(2) Require bi-annual survey reports from quarries to determine quantity of reserves.

- B.** Quarry operations re-working closed sites (i.e. old, shallow borrow pits) may be licensed regardless of existing reserve quantities. All other conditions apart from (a) apply.

**5. Revise the quarry application, licensing and monitoring processes.**

- A.** Enhance the application procedure to provide better information for decision making.

(1) Information clearly stating the application, review and licensing procedures must be provided to applicants.

(2) Require pre-application consultation with the AAC.

(3) Applications shall be reviewed by the Aggregate Advisory Committee (AAC). The AAC will not replace advice from any other government agency.

(4) Information required for application review includes:

(a) Site plan showing: proposed boundaries of excavation including project phases; parcel elevations; topographical details such as mature vegetation; existing and proposed access roads.

(b) Cross section of aggregate types (i.e. depth of peat layer, depth of marl layer, depth of bluff rock layer, etc.)

(c) Site Closure Plan and phases of implementation.

(d) Operational outline including: proposed excavation equipment; depth of excavation; production rate/schedule of completion of each phase; quantity of aggregate stockpiled; etc.

- B.** Require a closure plan to facilitate the rehabilitation of completed quarries.

(1) Closure plan to be agreed by the applicant and AAC before grant of planning permission. Completion of Closure Plan will become a condition of planning permission.

(2) Whenever practical the fulfillment of the closure plan should be implemented in stages as sections of the quarry are completed instead of waiting until the entire site is excavated.

- C.** Apply standards for application and license conditions consistently to ensure a fair and competitive market.

- D.** Provide quarry operators with unambiguous written standards for operation and reporting procedures.

- E.** Monitor licensed quarries on a regular basis to ensure compliance with agreed conditions.

- F. Strictly enforce laws for unlicensed operations selling aggregate to ensure fair competition amongst licensed quarries.
- G. Quarries larger than 10 acres may receive outline planning permission but shall be permitted in phases.
- H. Environmental responsibility by example: Government projects shall meet or exceed standards.

**6. Encourage development techniques that require less aggregate than current practices.**

- A. Building foundations on pilings rather than fill material.
- B. Fill parcel only to the extent required to allow storm water drainage control – elevate building footprint and not entire parcel.
- C. References and details (quotes from report written in italicized text)

**i. . Aggregate Importation:**

CH2MHill Report – 8.3 Recommendations 8, 9, & 10; text section 5.2 & 8.4

The continuation of upland quarries with the recommended improvements should be viewed as a short-term solution for the supply of aggregate and fill. Reliance on local quarries beyond the next decade will result in the transformation of thousands of acres of land in to quarry pits with the inevitable loss of natural resources and space for future development. The recommended long-term solution to aggregate and fill supply lies in importation. The Consultants’ conclusion is: *“Within the next year, the consulting team strongly suggests that the Cayman Islands Government work with an industry stakeholder group and other interested parties to thoroughly investigate the technical, economic, and environmental feasibility of constructing a commercial-level and permanent bulk materials offloading dock on Grand Cayman, removed from the George Town area.”*

**ii. Locate quarries in areas of reduced risk of environmental impact:**

CH2MHill Report – 8.3 Recommendations 1 & 4

*“Overall, the findings of the aggregate and fill study indicate that if no environmental protection criteria are applied, there is ample aggregate and fill to meet future demands for many decades, primarily through upland mining operations. However, the Caymanian people, particularly during Vision 2008, confirmed the long-held public opinion that balance between the natural and built environments must be established, and that environmental constraints on aggregate and fill acquisition must be applied to protect the integrity of the island’s natural resources.”*

**iii. Constraints Analysis Screening:**

CH2MHill Report 8.3 Recommendation 4; Text section 4.3

*“An example application of conceptual environmental constraints was presented to demonstrate that even when these factors”* (i.e. removing valuable areas such as fresh water lenses from consideration while highlighting areas of quality aggregate) *“are applied in a fairly conservative manner, adequate upland areas could be identified that yield sufficient construction aggregate and fill to meet currently anticipated construction material demands for up to several decades”*. Government’s Land Information System (LIS) offers a tool to estimate natural resource impacts from quarry sites as well as identify areas conducive to productive mining. An additional benefit is the objective evaluation of the merits of all quarry applications using the same criteria.

The “Quarry Siting Criteria” map attached to the recommendations illustrates (1) areas where quarries and excavations should be prohibited and (2) sensitive areas of remaining primary vegetation and water lenses.

Quarry exclusion areas were selected based on their unique natural resource values and includes sensitive water features, designated Mangrove Buffer zones the proposed Barkers National Park, the Mastic Trail, and Salinas Reserve.

Sensitive areas of primary vegetation and water lenses, while not as vital as the natural resources illustrated in the quarry exclusion areas, deserve special consideration for protection as follows:

- a. **Sensitive Area 1** consists primarily of lands identified as being over a water lens. The siting of quarries in these areas is discouraged, and consideration of such usage should trigger a more stringent review including environmental impact assessments.
- b. **Sensitive Area 2** are lose lands identified as being primary mangrove forest based on 1988 Landsat Imagery. Lands of primary vegetation generally host a higher degree of bio-diversity. The siting of quarries in these areas is discouraged, and consideration of such usage should trigger a more stringent review including environmental impact assessments.
- c. **Sensitive Area 3** consists of those areas making up primary vegetation. Lands in these areas also host a high degree of biodiversity. Therefore, if quarrying is to be permitted it should only be after taking into consideration the environmental impacts. (These areas were also derived from the 1988 Landsat Imagery).
- d. **Less Sensitive Areas** are those areas that have the potential to be more suitable for quarry siting. The review process is to be less stringent in these areas.

### **Optimize quarry productivity:**

*CH2MHill Report – 8.3 Recommendation 2 & 5; text section 5.1.2*

*“There is a clear need to optimize yields obtained from existing or future licensed upland mines to reduce the need to open new land surfaces to large-scale excavations for construction material.”*

#### **a) Increase depth of excavation following pilot study**

*“The Cayman Islands Government should work with industry representatives to implement pilot tests of excavations into brackish aquifers deeper than those that have been authorized in the past. By deepening the functional mined areas, much greater yields can be obtained while minimizing the footprint of the impacted area.”*

#### **b) Require excavation to maximum licensed depth**

*“The Cayman Islands Government should not grant new licenses until applicants demonstrate that they have properly optimized extraction of mineable reserves from their former sites. Incomplete yields from licensed facilities leads to the perceived need for new mining approvals when, in reality, the unavoidable impacts of such new excavation sites could be deferred, if not eliminated, through more effective use of the licensed sites.”* This recommendation stems from site investigations at old quarries where it was found that many, although licensed to excavate 12 to 14 feet below DOS had in fact excavated to only 3 to 6 feet before abandoning the quarry. Removing the soft top marl layer avoids the expense of blasting, crushing and larger equipment; however, the result is the rapid destruction of surface habitat with little product returned.

### **iv. Manage the number of quarries based on supply & demand:**

*CH2MHill Report – 8.3 Recommendations 3*

*“Licensing of new aggregate and fill excavations on Grand Cayman should be based on the demonstrated need for new construction material sources. Continued licensing of upland mines without sufficient regard for island-based development planning, or the protection of prioritized environmental planning or cultural resources, should not be allowed. Without such criteria, upland mines will continue to be sited, not on the basis of logic or need, but merely on the basis of the land owner’s business interest.”*

### **v. Revise application, licensing & monitoring processes:**

*CH2MHill Report – 8.3 Recommendations 6 & 7; text section 7.4*

The consulting team produced a separate report, which is appended to the main document, entitled Evaluation of Procedural Guidelines for the Mining and Dredging Project Review. *This report outlines short-term and long-term policy and procedural changes for reviewing and licensing aggregate mining proposals. Advice was based on: interviews with quarry operators, developers, government agencies; practices used in other countries; as well as accepted best management practices. Short-term recommendations for immediate implementation are listed below; however we strongly encourage government to work toward adopting the complete set of guidelines. Many of the basic principles may be applied to all development reviews.*

#### **vi. Enhanced application procedure:**

- *“To reduce regulatory review confusion as well as real or perceived inconsistency in treatment of applicant’s submitted information, a staff (or technical) review committee should be formed that consists of technical staff members of each department with responsibility to review applications or affect approval or denial of permits for aggregate and fill extraction, import, and use.”*  
The Aggregate Advisory Committee currently fulfills this recommendation.
- *“A pre-application conference should become mandatory for major mining and dredging projects with the goal of establishing agreement on the application information needs, and the process for review and approval.”*
- *“The Cayman Islands Government should meet or exceed the environmental standards it chooses to require of the private sector.”*
- *“The review and approval process must be clear, formally published, and fully understood by all stakeholders.”*
- *“The program should provide for compliance evaluations, and penalties for failure to comply with license specifications.”*

#### **D Closure Plan**

To date most closed quarries have been left as open borrow pits with no environmental value or human-use function. During a 2-day ecosystem restoration workshop the consulting team worked with government and private sector representatives to formulate plans for rehabilitation of abandoned quarry pits. These same principles should be applied to the end stage of newly approved quarry operations and should be agreed with the applicant during the review process for inclusion as a condition of the Planning Approval.

The concept of restoring function to closed quarries is as broad as the applicant’s imagination and may not be limited to lake residential development, wildlife sanctuaries, or recreational areas. An example of a closure plan with a goal of restoring environmental function was outlined by the consultants and included suggestions as follows.

- *“Contour the edge”* (of the pond) *“to create littoral zone slopes”* (needed to provide habitat for wading birds).
- *“Contour the bottom to create irregularities.”*
- *“Create islands.”*
- *“Add sediment and/or organic matter to littoral zone and adjacent uplands to support re-vegetation, and re-vegetate the littoral zone, shoreline and adjacent uplands.”*
- *“Create niche spaces (e.g. nesting, resting, bedding, refuge spaces)”*
- *“Stock wildlife”*

## **E Outline planning permission with phased implementation**

In other jurisdictions the practice used to ensure compliance with licensed conditions is to require a performance bond so that the license-holder's funds could be used to restore the site in the case of financial failure of the operation or the disregard of commitment to complete the closure plan. Performance bonding has commonly been used for dredge operations as a condition of Coastal Works Licenses, but has not been an option for Planning Conditions.

An alternative measure for enforcing Planning Conditions is to phase the quarry operation in a way that allows the license-holder to proceed with subsequent sections of the quarry only after demonstrating that initial phases have been completed in accordance with conditions of the quarry permit. In practical terms the phasing could be used to ensure compliance with a variety of conditions such as depth of excavation and offers a system of monitoring the project. In addition it is advisable that the closure plan is carried out with each phased sequence to reduce the risk of non-compliance at the end of the project when the quarry is not producing revenue.

### **7. Employ development techniques requiring less fill:**

*CH2MHill Report – text section 5.1.1*

A different strategy for increasing the functional life of quarries is to decrease the demand for aggregate and fill.

*“The Cayman Islands Government should encourage the development and construction industries to adopt innovative approaches to site design and construction and to align project goals with some of the concepts described below.”*

- *“Mass fill only for portions of the land parcel needed for the building footprint and associated ingress and egress paths.”* Lower areas of the parcel could be used for storm water management swales and ponds.
- *“Rather than using mass fill for establishing minimal design elevation for construction, developers could be encouraged, or required, to construct appropriate buildings on pilings.”*
- Government should investigate road construction techniques that require less aggregate and fill material than currently used.

## **8. Sustainable Development Planning and the need to balance the natural and built environments**

In summary, the consultants provide insights into the larger issue confronting Cayman, and offer a challenge to those with decision-making responsibility in guiding our future.

*“While most recommendations generated by this study are focused on issues associated specifically with dredging and mining project review, solutions to the problems identified, in many cases, will require a more global re-evaluation of national policies, protocols, and priorities. At the root of many of the Cayman Islands Government’s future decisions is the central theme of determining how to achieve sustainable development for the islands. The need to balance the natural and built environments is more than just a vision statement, and achieving this goal must transcend politics. It is a need that must be prioritized by this Government, and the next, and the next beyond that, if the collective efforts of successive generations of elected officials are to achieve institutional continuity and to succeed in responsible stewardship of the Cayman Islands’ people, natural resources, and economy. “*

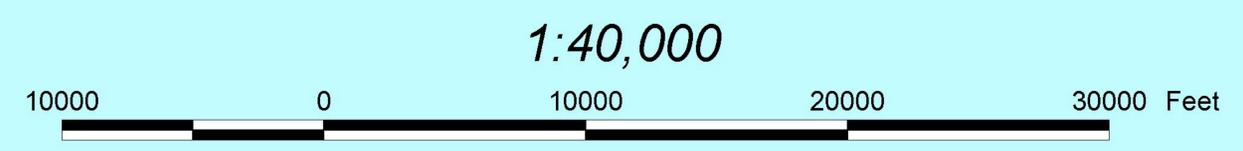
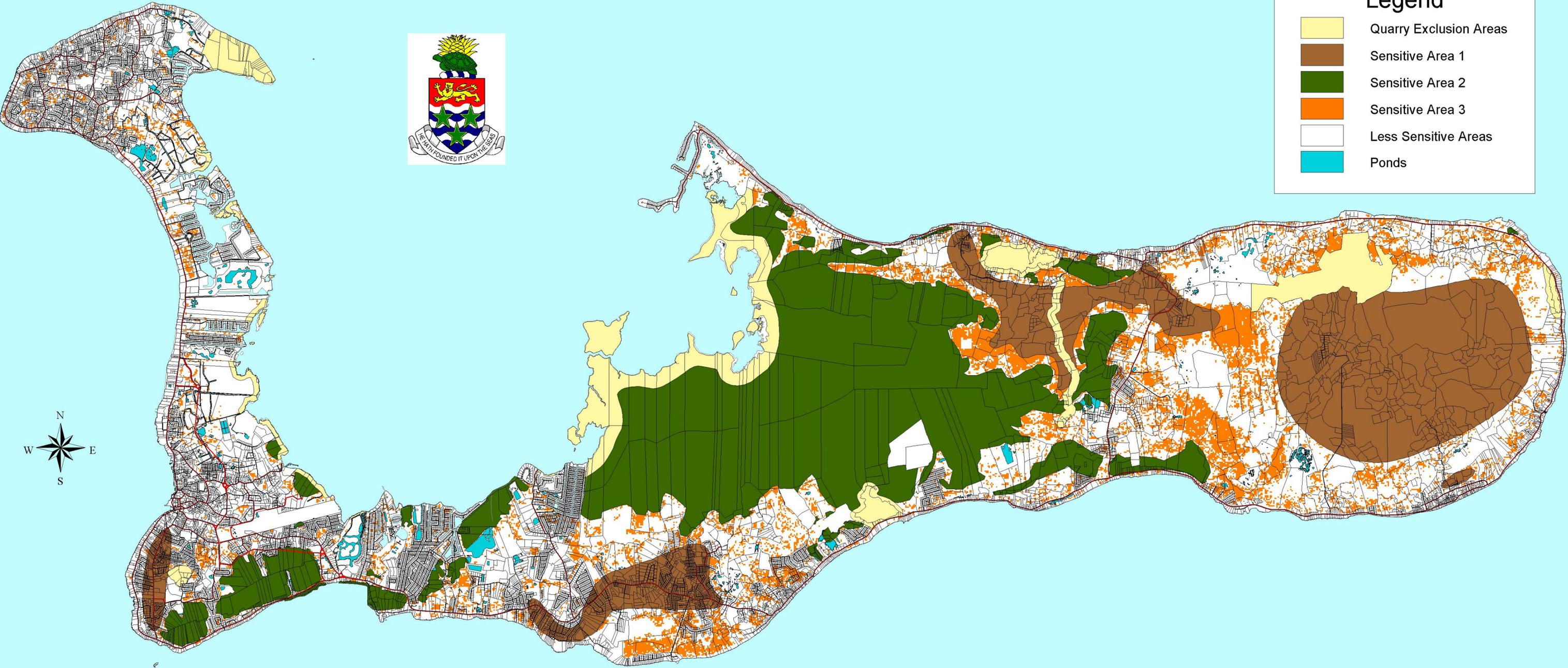
## **APPENDICES**

# Quarry Siting and Excavation Criteria Map



**Legend**

- Quarry Exclusion Areas
- Sensitive Area 1
- Sensitive Area 2
- Sensitive Area 3
- Less Sensitive Areas
- Ponds



Map Prepared by the  
Planning Department  
Policy Development Section  
February 24, 2004

**Ministry of Planning, Communications,  
District Administration & Information Technology**

**MEMORANDUM**

**TO:** Director of Planning ✓  
**CC:** District Commissioner  
Director, Department of Environment  
**FROM:** Permanent Secretary, PCDA&IT  
**DATE:** 26<sup>th</sup> July 2004



**OUR REF:** PLA/CPA/4/1  
PLA/CPA/1  
PLA/DCB/1

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**SUBJECT: CENTRAL PLANNING AUTHORITY – AGGREGATE POLICY  
RECOMMENDATIONS**

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I am directed that Cabinet advised that approval should be given to the Aggregate Policy Guidelines for the Central Planning Authority and that the documents be provided to the Development Control Board as a reference document. The Governor so ordered.

Please be guided accordingly.

Christine Maltman  
Permanent Secretary (Acting)