



# CONSERVATION POLICY IN BRIEF

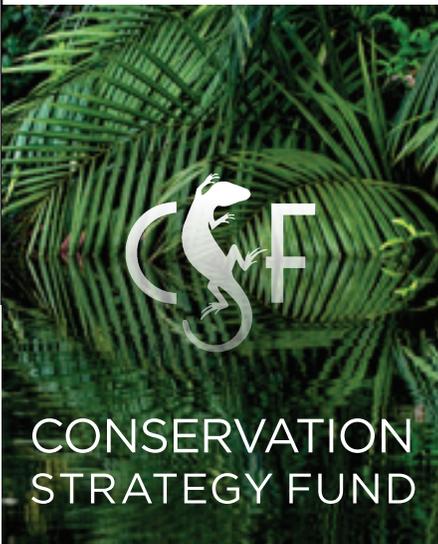
**OCTOBER** 2014 | N<sup>o</sup>.25  
conservation-strategy.org

## **AUTHORS:**

AARON BRUNER<sup>1</sup>  
CHARLES MAGNAN<sup>2</sup>  
RICHARD RICE<sup>3</sup>  
JOHN REID<sup>1</sup>

## **PHOTOS:**

ROBIN MOORE  
LEONARDO C. FLECK



## ECONOMIC COMPARISON OF ALTERNATIVES TO BUILDING A PORT ON GOAT ISLANDS: DOES JAMAICA NEED TO SACRIFICE A WORLD CLASS CONSERVATION SITE IN ORDER TO BUILD A WORLD CLASS PORT?

In 2013, Jamaica's Ministry of Transport, Works and Housing announced that the China Harbour Engineering Company (CHEC) had selected the Goat Islands to build a major transshipment port and accompanying industrial complex. With expansion of the Panama Canal due to be completed in 2015, the proposed port is seen as a major step toward Jamaica establishing itself as a key player in the changing global logistics chain. Success could bring much-needed jobs and economic activity.

However, the proposed site is in the core of the Portland Bight Protected Area (PBPA), an area of outstanding environmental importance. PBPA is home to at least seven animal species found nowhere else on earth, and contains the country's largest remnants of both limestone forest and contiguous mangrove systems. Four thousand



*Paulette Coley, a resident of Old Harbour Bay, holds up the day's catch.*

fishermen and women make use of the area's natural resources as the source of their livelihoods.

Building a port on the Goat Islands requires that Jamaica accept a trade-off: sacrifice environment for development. Our study assessed whether this trade-off is necessary; in particular, we addressed whether there are suitable alternative port sites that could promote development objectives at reduced environmental risk, and without imposing undue financial costs on the developer.

### *Methodology*

Our analysis focused on construction costs. We also considered environmental impact, and several other factors related to both operations and indirect benefits and costs to Jamaica. Calculations were driven by high-level port layouts designed for each site.<sup>4</sup> Construction activities considered were breakwaters, dredging, excavation, reclamation, and any necessary causeways, with costs accounting for the volume and composition of material involved, as well as whether the necessary materials could be sourced from construction operations. We did not consider facilities whose costs will be roughly the same across locations. Results therefore refer to differential, rather

than total costs.

Alternative sites assessed included Macarry Bay, which offers the potential to build a port and logistics hub that meets the full size and other requirements specified for the Goat Islands. Our optimum Macarry Bay layout puts the entire port facility on new land created in the bay through reclamation and connected by causeways across a narrow strip of swamp behind the beach to the industrial estates inland (Figure 1). We also considered an option that divides the required facility between two locations, with a transshipment port at Kingston Harbour and an industrial port and shore-side industrial complex on the eastern side of Bowden Harbour. This option was included based on the finding that neither site was suitable for the entire facility, but each offers advantages for the functions considered.

### Results

An optimum layout at Macarry Bay costs \$200 million less to build than a low-cost scenario at Goat Islands. While both options require the developer to move a similarly large volume of material,<sup>5</sup> the confirmed presence of sand at Macarry Bay makes the necessary dredging, excavation, and reclamation much less expensive than at the Goat Islands, which are made of rock. Even including the cost of two large breakwaters needed at Macarry Bay, estimated differential cost is \$930 million versus \$1.15 billion for Goat Islands.

Environmental damage from building in Macarry Bay would also be far lower. Building there poses little risk to endangered species, and threatens a much smaller area of important ecosystems. Conversely, economic losses at Goat Island in terms of tourism potential and contribution to fisheries productivity are estimated to be three times higher. Considering other relevant characteristics, Macarry Bay is inferior only with respect to its access to the road network and Kingston, and also possibly in terms of the need for maintenance dredging of the approach channel, especially after hurricanes. Macarry Bay poses less risk to local livelihoods, allows a more efficient transshipment port layout, and has greater potential to expand activities on land and to deepen the access channel.

Building at Kingston/Bowden presents the obvious challenge of developing a split facility. However, the combination may offer major

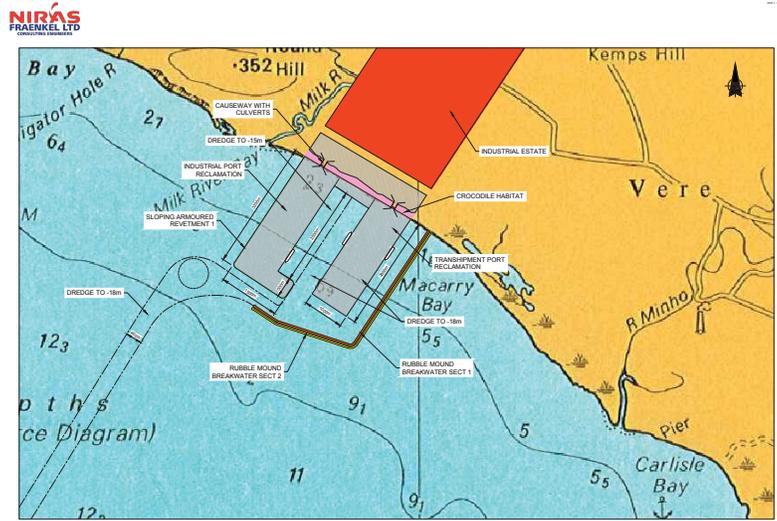


Figure 1: Macarry Bay design prioritizing efficiency and reduced environmental impact.

benefits for Jamaicans, helping to further Kingston Harbour’s competitive advantage in transshipment, and significantly improving connectivity between Kingston and centres of population to the east and Port Antonio to the north. Environmental impact would also be small.

Whether or not the proposed facility is cost competitive depends on whether the material underlying the site in Kingston Harbour is primarily mud or sand. In the latter case, total differential cost is estimated at \$1 billion, lower than the Goat Islands option. If benefits are deemed sufficient to justify potential complexity in design, it would be straightforward to further investigate whether the facility is cost-competitive.

### Conclusion

While this rapid assessment cannot arrive at absolute conclusions, findings justify serious consideration of other sites, including Macarry Bay, as alternatives to the Goat Islands. If more detailed investigations confirm these findings, Jamaica will be presented with the opportunity to build a new world-class port without losing a world-class conservation site.

#### Notes:

1. Conservation Strategy Fund
2. Niras Fraenkel Ltd.
3. Conservation Agreement Fund
4. Layouts at this scale are sufficient to provide clear evidence of differences in costs and related issues, but are not intended to provide either specific designs or detailed cost information that would be necessary if one of the alternative sites is selected for development.
5. Macarry Bay: 70 million m<sup>3</sup> dredging to create the port and a long approach channel; 40 million m<sup>3</sup> reclamation. Goat Islands: 80 million m<sup>3</sup> excavation to level the Goat Islands; reclamation requiring a similar volume of material between and around the Islands.

For the full report, please visit:

<http://www.conservation-strategy.org/en/publications>



7151 Wilton Avenue, Suite 203  
Sebastopol, CA 95472  
T: 707.829.1802  
F: 707.829.1806

[www.conservation-strategy.org](http://www.conservation-strategy.org)