

St. Lucia
National Emergency and Management Organisation
Damage Assessment and Needs Analysis
Report on the Passage of Hurricane Dean

1. Executive Summary

Hurricane Dean affected St. Lucia on Friday, 17th August 2007. When the all clear was issued by St. Lucia's Meteorological services at 6:00 pm of the same day, it was too late to undertake the Initial Damage Assessment (IDA). On Saturday a small team of assessors augmented the work of the several district Disaster Preparedness Committees, by visiting some of the more affected sites. Based on the information gathered at those visits and the information supplied to NEMO by the various committees and the sector officials, the total damage summarised in Table I, has been estimated at **\$18,152,400**.

Table I – Preliminary cost of Damage caused by Hurricane Dean

Sector	Estimated Cost
Housing & buildings	\$800,000
Agriculture and Fisheries	\$13,200,000
Utilities	
LUCELEC	\$500,000
WASCO	\$5,000
Roads and drains	\$900,000
SLASPA Related	\$922,000
Coastal	\$700,000
Education/Schools	\$300,000
Sub-total	\$17,327,000
Miscellaneous (20 % of total less amount estimated for bananas)	\$825,400
Total	\$18,152,400

2. Introduction

This Report has been prepared as a consequence of the passage of Hurricane Dean, which affected St. Lucia on 17th August 2007. It is based on information gathered from district disaster preparedness committees, sector summary reports and cursory assessments conducted during site visits to a few damaged areas. The Report essentially provides an initial damage assessment of the effects of the Hurricane.

3. Background

On Wednesday, 16th August 2007, a hurricane warning was issued for St. Lucia by the Government of St. Lucia (GOSL). St. Lucia was therefore expected to be experiencing hurricane conditions within 24 hours of the posting of the warning. At a pre-strike meeting held on 16th August 2007, it was agreed to shut down both the public and private sector by 6:00 pm. Dean began affecting St. Lucia from as early as 6:30 pm on the same Thursday. The graphic in Figure I is a representation of the path which was projected for St. Lucia by the National Hurricane Centre in Florida and the warning which was issued by the GOSL.

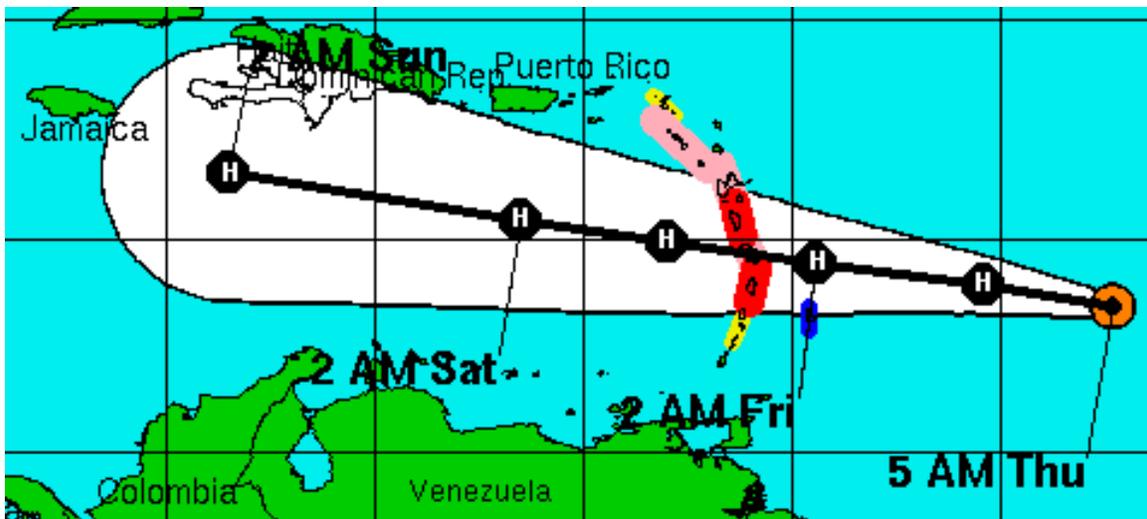


Figure I - Projected path of Hurricane Dean as of August 16th 2007

4. Site Visits

Site visits were conducted by two damage assessment teams comprising engineers, quantities surveyors and construction technicians. Rough estimates of damaged sites and buildings were obtained and preliminary costs established. These visits simply enabled the assessors to establish a first-hand perspective of the damaged areas.

5. Observations and Findings

Generally, it appears that most of the damage suffered during Hurricane Dean was caused by the hurricane and tropical storm winds which battered primarily the northern half of the Island. As been warned from Thursday, 17th August 2007, the Hurricane passed through the channel between St. Lucia and Martinique, with the anticipation of hurricane-force winds extending 15 miles from the eye. Reports from the Meteorological station at Vigie Airport indicated that maximum gusts reported was 56 knots or 65 miles per hour. This seemed to reconcile with the computer modules downloaded from the Internet which suggested that the northern section of St. Lucia would have been experiencing the hurricane force winds. The graphic in Figure II provides a perspective of the swath of wind predicted by the National Hurricane Centre in Florida.

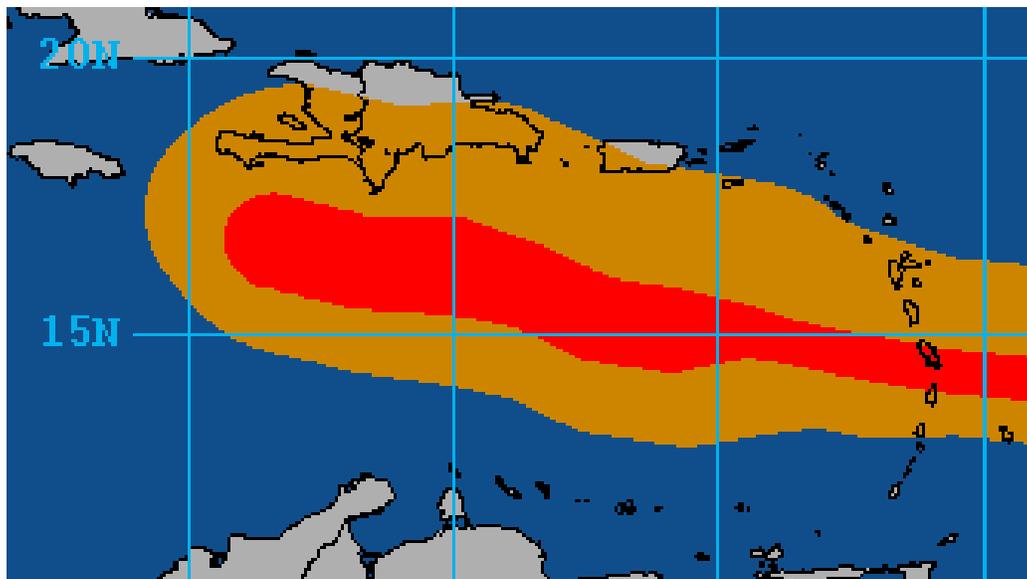


Figure II - Swath of hurricane and tropical storm winds from Dean

6. Damage Assessment

Generally it appears that most of the damage was caused by the winds and the rough seas. However there were several areas where damage was as a result of flooding. On a sectoral basis, the damage can be categorised as prescribed below.

6.1 Housing & Buildings



Photo 1 – Completely destroyed house at Gros Islet

The northern areas appear to be the worst hit, with over 15 roofs blown out, and two small houses along the waterfront completely damaged in the Town of Gros Islet. As regards to the other communities, the damage was primarily to roofs, though most of them repairable. The national breakdown is not available, as only Canaries reported 9 roofs damaged and Vieux Fort advised that two institutional buildings lost sections of their roof. The other communities reported that there were “a few damage roofs”. The only

reported case in Castries was the loss of the roof to the Seventh Day Adventist Church at Bocage.

Additionally, the Ministry of Health reported on the loss of roofs to the Children’s Ward at Victoria Hospital and at the St. Judes Hospital in Vieux Fort. There were no reported cases of damage to health centres buildings.

6.2 Coastal Damage

Damage to the coastline appears to be significant, particularly to the north of the Island. Specific damages include:

- Slope protection works at the western end of the GFL Charles Airport;
- Slope protection works along Bay Street in Gros Islet, including portions of the board walk on the



Photo 2 – Damaged culvert and slope protection

- recently constructed jetty;
- Sporadic damage to the slope protection works to the Pigeon Point Road;
 - 60 metres of slope protection works along the Faud A Chaux Road to the Millennium Highway;
 - The groin at the mouth of the outfall to the Jn Baptiste drain in Castries was significantly affected, with boulders pushed onto the waterfront road.

Though this was the only reported and observed damage per se, significant debris, sand, stones and gravel were strewn across all the low-elevation coastline roads. The Pigeon Point Road and Gros Islet's Bay Street were particularly affected. Further, although not reported, there is most likely to be a number of areas where the coast line was affected to the extent that repairs would be necessary at a later date.

6.3 Agriculture & Fisheries

Banana plantations have undergone severe battering. Reports from sector officials suggest the following breakdown:

- Roseau valley (Region 7) – 85 %;
- Cul de Sac valley (Region 8) – 65%;
- Dennery valley (Region 3) – 60% (also completely flooded);
- Northern Farms – (Region) – 80%;
- Micoud/ Patience (Region 4) – 70%;
- Belle vue (Region 5) – 40%



Photo 3 – Damaged banana plantation in Dennery

The heavy seas have also resulted in a number of boats and engines being lost and damaged. The reports obtained so far suggest;

- Castries – 5 damaged boats, 1 engine lost and 3 damaged engines;
- Gros Islet – 6 boats lost and 1 completely damaged engine;

6.4 Utilities

With the heavy winds a number of poles fell and were displaced about the base, lines dropped with some reported damage, and communication towers were affected as a result of the fluctuation of electricity. Reports suggest the following:

- Poles fell throughout the Island (**LUCELEC to provide information**);
- Miles of lines dropped **LUCELEC to provide information**;
- Cable and Wireless reported 8 fallen poles and 212 reports of downed lines;
- Digicel reported that their communications tower at Piton Flore was struck by lightning and the service to the south was affected.

Whereas, there is no information on the length of lines affected, C&W has indicated that such details would only be available when the reconstruction commences. WASCO did not report any damages, apart from having to operate on standby power at the Ciceron Plant.

6.5 Hotel Industry

From all reports a number of beaches serving the major hotels have been affected by the heavy seas.

- Car parks and the entrance roads were inundated with sea water and debris;
- Minor damage was reported by a number of the hotels; most of which is easily repairable.

6.6 Known Vulnerable Communities

Of the two well known vulnerable communities, Anse La Raye, although on the west coast did not suffer any significant damage. Dennery on the east coast despite undergoing coastal protection works, suffered some damage with a few residents having to evacuate their properties. Three small structures sustained damages.



Photo 4 – Damaged property at Dennery

However, information and observations suggested the damages in Dennery, were not as has become the norm whenever a hurricane strikes St. Lucia.

6.7 Roads and Drains

Throughout the Island there were several reports of fallen trees across roads and property, and blocked drains. There was an extensive layer of sand across the Vigie road, particularly in a zone stretching the Terminal buildings and the covered walkway. On the Barre De L'isle there were several fallen trees and power lines rendering the road impassable for a number of hours. The Anse La Raye – Canaries Road was cut-off as a result of a major slide and there were several other slides throughout the Island. Being the first responders insofar as road clearance is concerned, several crews were engaged in

the tree cutting and soil disposal exercise. The numbers of fallen trees and land slides and the volumes of soil removed have not been quantified. However, the Ministry of Communications, Works, Transport and Public Utilities, has established a preliminary estimate of the cost associated with the clearing up.

6.8 Schools

Information obtained from the Ministry of Education revealed some eleven schools were damaged at varying levels. The Report makes reference to damage to roofs, fences, walls, ceilings and electrical supplies installation. Schools in the known vulnerable communities seemed to have suffered the worst, with the fence at Anse La Raye Infant being significantly damaged as a result of the sea surges and the Clendon Mason in Dennery, sustaining damage to the roof and walls.

6.9 SLASPA & Ports

The Ports of Castries underwent a heavy battering during the passage of Hurricane Dean. SLASPA reports indicate that there was severe damage to the Ferry Terminal at Shed 6. The roof was significantly affected and the flooring was undermined by the heavy seas. At Shed 7, there was also damage to the slope protection works and the asphalt pavement.



Photo 5 – Damage to section of pavement at Shed 7



Photo 6 – Damage to section of Ferry Terminal



Photo 7 – Damage to Fence at GFL Charles Airport

At the Petit Carenage Bay (Ganter's Bay) SLASPA's property also sustained damage. Reports also suggest that at least three jetties in that bay got damaged. There was also

significant damage to the building and equipment at the Coal Pot Restaurant which is located on the western flanks of that Bay.

6.10 Cost Estimates

Based on the inspection undertaken and information received, cost of the damages on a sectoral basis could be at:

Table II – Damage By Economic Sectors

Sector	Estimated Cost	Comments
Housing & buildings	\$800,000	Very preliminary and does not include all the damages throughout the Island. However, it includes an amount for the institutional buildings.
Agriculture and Fisheries	\$13,200,000	Banana suffered damage to fields varying from 40% to 85%. The reports suggested both toppling and snapping of trees and the highest concentration of damage was in the Roseau valley. The island-wide average has been placed at seventy-five percent and the total land under bananas estimated at 5,000 acres. In establishing the estimate, 60% of the cost per acre was utilised. An amount has been allowed for the damage to the fisheries sector.
Utilities LUCELEC Telecommunications WASCO	\$500,000 \$5,000	This is based on information supplied by LUCELEC. The telecommunications cost is not known as C&W has not provided such information.
Roads and drains	\$900,000	This is an estimate provided by the Ministry of Communications, Works, Transport and Public Utilities for cleaning-up. It does not include any reconstruction or retrofitting works.
SLASPA Related	\$922,000	This is based on a detailed cost breakdown provided by SLASPA, but does not include damage sustained at Petit Carenage and at the GFL Charles Airport
Coastal	\$700,000	
Education/Schools	\$300,000	This is based on information submitted by the Ministry of Education
Hotels		No information on cost is available
Total	\$17,327,000	

7. Conclusion

Based on the observations, the major damages were a direct effect of the hurricane and tropical force winds. Flooding however caused damage to the banana plantations in the three valleys. With regards to the City and Anse La Raye village, it could be concluded that the recently completed drainage project seemed to have functioned as designed as no flooding was reported in these areas. Generally, the infrastructure withstood the forces of nature impacted by Hurricane Dean. The Initial Damage Assessment has revealed a total estimate of \$18,152,400.00, as indicated in Table III.

Table III – Summary - Initial Damage Assessment

	Amount
Sectors	\$16,527,000.00
Housing and Buildings	\$800,000
Miscellaneous (20 % of total less amount estimated for bananas)	\$825,400
Total	\$18,152,400