



# Typhoon Odette: Needs Assessment in Bohol

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# Outline:

## Typhoon Odette (Rai) Landfall Areas

### Damaged to Housing

#### Needs Assessment: Loboc

- Partially Damaged Houses
- Fully Damaged Houses
- Status of Rebuilding
- Local Hazard - Hazard Hunter
- Microfinance Institutions
- Livelihood
- LGU

#### Needs Assessment: Inabanga

- Partially Damaged Houses
- Fully Damaged Houses
- Status of Rebuilding
- Local Hazard - Hazard Hunter
- Microfinance Institutions
- Livelihood
- LGU

### Existing Housing Typologies

### Construction Materials

### Recommendations

- Option 1
- Option 2
- Option 3



# MAP 1: Typhoon Odette Path and Location of Landfalls

Path of the Eye of  
Typhoon Odette

TROPICAL CYCLONE WIND SIGNAL



Landfalls

## LANDFALLS of TYPHOON ODETTE

December 16, 2021

- 1:30 PM - Siargao Island, Surigao del Norte
- 3:10 PM - Cagdianao, Dinagat Islands
- 4:50 PM - Liloan, Southern Leyte
- 5:40 PM - Padre Burgos, Southern Leyte
- 6:30 PM - Island town of President Carlos P. Garcia, Bohol
- 7:30 PM - Bien Unido, Bohol Mainland
- 10:00 - Carcar, Cebu

December 17, 2021

- 2:00 AM - La Libertad, Negros Oriental
- 4:00 PM - Roxas, Palawan

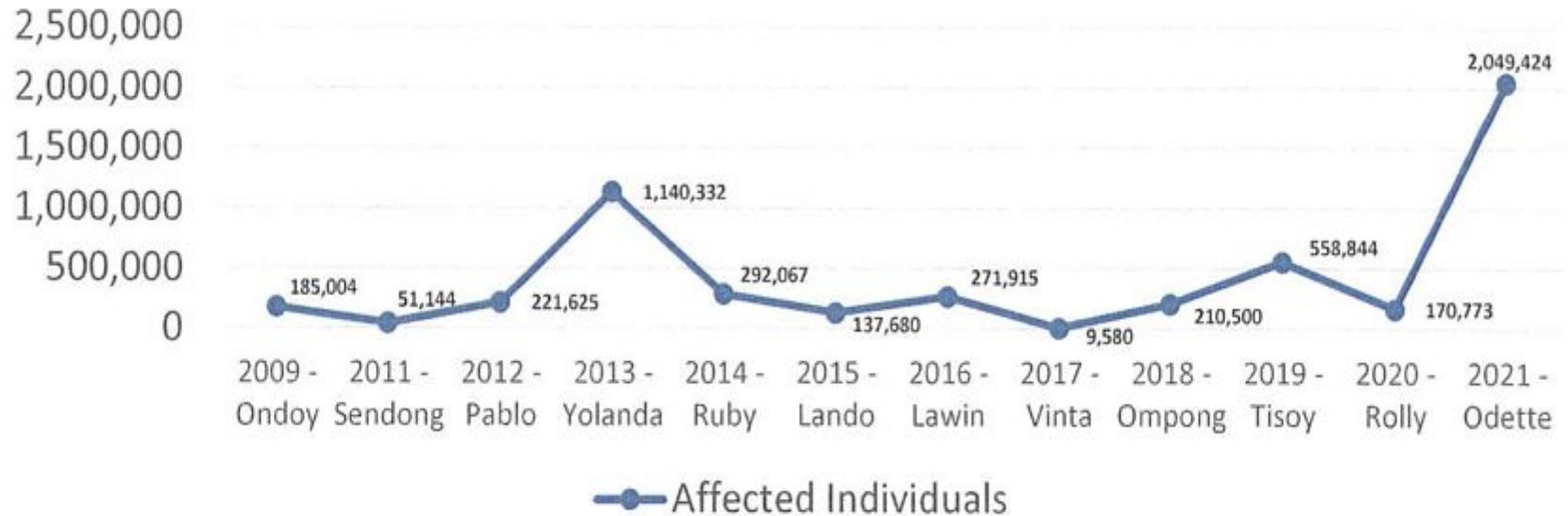
### SOURCES of INFORMATION

1. PAGASA Bulletin #13, 8 PM, Dec. 16, 2021
2. [www.rappler.com/nation/weather/typhoon-odette-pagasa-forecast-december-17-2021-5am](http://www.rappler.com/nation/weather/typhoon-odette-pagasa-forecast-december-17-2021-5am)

Tropical Cyclone Bulletin #13 - Typhoon "ODETTE" {RAI}  
8 PM December 16, 2021



## Damaged Houses in the Past Major Typhoons since 2009



In terms of damaged houses, both partially and totally damaged, ODETTE has the highest number of damaged houses.



Source: Situational Report for Typhoon Odette #46, Feb 21, 2022, Office of Civil Defense, NDRRMC

## DAMAGED HOUSES

A total of 2,031,824 damaged house/s are reported in MIMAROPA, Region 6, Region 7, Region 8, Region 9, Region 10, Region 11, Region 12, CARAGA, BARMM.

REGION	PARTIALLY	TOTALLY	TOTAL	AMOUNT (PHP)
GRAND TOTAL	1,585,252	446,572	2,031,824	62,675,818
MIMAROPA	74,319	15,465	89,784	0
Region 6	362,743	61,878	424,621	0
Region 7	900,558	245,659	1,146,217	0
Region 8	135,489	52,221	187,710	0
Region 9	103	136	239	0
Region 10	6,389	857	7,246	62,225,818
Region 11	0	2	2	0
Region 12	0	1	1	0
CARAGA	105,591	70,340	175,931	0
BARMM	60	13	73	450,000



# Initial Needs Assessment: Loboc, Bohol

*Technical and Non-Technical Assessment  
Barangay Ugpong & Barangay Valladolid*







## Partially Damaged Houses:

**Brgy. Ugpong:** 33 Houses

(Estimated Cost: PhP 2.64 Million)

**Brgy. Valladolid:** 82 Houses

(Estimated Cost: PhP 6.56 Million)





## Fully Damaged Houses:

**Brgy. Ugpong:** 19 Houses

(Estimated Cost: PhP 3.8 Million)

**Brgy. Valladolid:** 25 Houses

(Estimated Cost: PhP 5 Million)





# Status of Rebuilding

## OBSERVATIONS:

- Both communities, Ugpong and Valladolid, had already started rebuilding through assistance from LGUs and private sector.
- Totally damaged households are still residing at temporary shelters.
- Assistance provided were for transitional shelter such as:
  - CGI Sheets
  - Coco Lumbers
  - Tarpaulins



# Local Hazard – Hazard Hunter

## Ugpong:

- Seismic Hazard
  - Nearest Active Fault - East Bohol Fault (4.7 KM)
  - Ground Rupture - Safe
  - Ground Shaking - Prone; Intensity VIII
  - Earthquake Induced Landslide - Highly Susceptible
- Hydro Meteorological
  - Flood - High Susceptibility; 1 to 2 Meters Flood Height and/or more than 3 days flooding
  - Storm Surge - Safe
  - Severe Wind - 88.1 - 117 KPH (20 year return period)





# Local Hazard – Hazard Hunter

## Valladolid:

- Seismic Hazard
  - Nearest Active Fault - East Bohol Fault (4.6 KM)
  - Ground Rupture - Safe
  - Ground Shaking - Prone; Intensity VIII
  - Earthquake Induced Landslide - Highly Susceptible
- Hydro Meteorological
  - Flood - High Susceptibility; 1 to 2 Meters Flood Height and/or more than 3 days flooding
  - Storm Surge - Safe
  - Severe Wind - 88.1 - 117 KPH (20 year return period)



# Microfinance:

## Ugpong:

- Observations:
  - Only 1 out of 8 households visited was a member of an MFI - ASA Philippines.
  - Microfinance Institutions Present within the community:
    - ❑ ASA Philippines
    - ❑ RAFI
    - ❑ Life Bank
    - ❑ CARD
    - ❑ Dunganon
    - ❑ TSKI
    - ❑ Carmen
  - Homeowners interviewed were not comfortable getting a loan to rebuild their houses because Typhoon Odette has affected and destroyed their sources of income.

## Valladolid:

- Observations:
  - No one from the visited houses were a member of any MFI present in the community.
  - Microfinance Institutions Present within the community:
    - ❑ ASA Philippines
    - ❑ RAFI
    - ❑ Life Bank
    - ❑ CARD
    - ❑ Dunganon
    - ❑ TSKI
    - ❑ Carmen





# Livelihood:

## Ugpong:

- Observations:
  - Livelihood present in the community:
    - Nipa Weaving
    - Tourism (Souvenirs, Loboc River Cruise etc.)
    - Construction (Demand started after Typhoon Odette)
    - Fishing
    - Agriculture

## Valladolid:

- Observations:
  - Financial condition of the community is starting to recover.
  - Livelihood present in the community:
    - Agriculture (Copra)
    - Construction (Demand picked-up after Typhoon Odette)



# Local Government Unit - Loboc, Bohol:

## Observations:

- Total Number of Partially Damaged: 2,850 (Estimated Cost: PhP 228 Million)
- Total Number of Fully Damaged: 424 (Estimated Cost: PhP 84.8 Million)
- Last Typhoon: 2013 – Typhoon Yolanda
- Provided Shelter Assistance: For totally damaged – 10 CGI Sheets
- Building Permit: Required for reconstruction
- Community's Concept of Safe Room: None
- Wind Speed: No recorded wind speed
- Local Builders:
  - Labor Rate:
    - Labor – PhP 400
    - Skilled - PhP 600
  - Local Builders' Knowledge to build wind resistant houses: Needs improvement
  - Builders' Concept of Safe Room – None
  - Training and Capacity Building – Identified gap in disaster resilient construction practices



# Local Government Unit -Loboc:

## Observations:

- Community: No IEC Materials focused on before and during typhoons
- Land
  - Ugpong – Some parts of the Barangay are under “No Build Zone”
  - Valladolid – Tagged as “No Build Zone” and needs relocation
- Relocation Plans:
  - Ugpong
    - ☐ Relocation plans are in partnership with an NGO – Loboc International
  - Valladolid
    - ☐ Identified 31 homeowners who signified interest to relocate
    - ☐ In partnership with NHA and a private donor for land







# Initial Needs Assessment: Inabanga, Bohol

*Technical and Non-Technical Assessment  
Sitio Bacayan, Barangay Badiang*







## Partially Damaged Houses:

**Sitio Bacayan, Barangay Badiang:**

3 Houses





## Fully Damaged Houses:

**Sitio Bacayan, Barangay Badiang :**

49 Houses





# Status of Rebuilding

## OBSERVATIONS:

- Majority of the affected households are still living with relatives.
- Some households built makeshift houses using salvaged materials for their temporary shelter because no shelter assistance has been provided yet.



# Local Hazard – Hazard Hunter

## Sitio Bacayan, Barangay Badiang:

- Seismic Hazard
  - Nearest Active Fault - North Bohol Fault (3.4 KM)
  - Ground Rupture - Safe
  - Ground Shaking - Prone; Intensity VIII
  - Earthquake Induced Landslide - Safe
  - Liquefaction - Highly Susceptible
  - Tsunami - Safe
- Hydro Meteorological
  - Rain Induced Landslide - Low Susceptibility; No identified landslide
  - Storm Surge - Safe
  - Severe Wind - 117.1 - 220 KPH (20 year return period)



# Microfinance:

## Barangay Badiang:

- Observations:
  - 11 out of 52 households in the Barangay are members of ASA Philippines.
  - Microfinance Institutions Present within the community:
    - ☐ ASA Philippines
    - ☐ RAFI
    - ☐ Life Bank
    - ☐ CARD
    - ☐ TSKI
  - Availing of loans from MFIs are not seen as an option since they do not have savings and are mostly relying on donations.





## Livelihood:

### Sitio Bacayan, Barangay Badiang:

- Observations:
  - Livelihood present in the community:
    - Fishing
    - Construction
    - Sawali Weaving
    - Agriculture



# Local Government Unit - Inabanga, Bohol:

## Observations:

- Total Number of Partially Damaged: 3,708
- Total Number of Fully Damaged: 7,781
- Last Typhoon: 2013 – Typhoon Yolanda
- Provided limited shelter assistance: y damaged – 10 CGI Sheets
- Building Permit: Required for reconstruction
- Community's Concept of Safe Room: None
- Wind Speed: No recorded wind speed
- Local Builders:
  - Labor Rate:
    - Labor – PhP 400
    - Skilled - PhP 600
  - Local Builders' Knowledge to build wind resistant houses: Needs improvement
  - Builders' Concept of Safe Room – None
  - Training and Capacity Building – Identified gap in disaster resilient construction practices



# Local Government Unit - Inabanga, Bohol:

## Observations:

- Community: No IEC Materials focused on before and during typhoons
- Land
  - Sitio Bacayan, Barangay Badiang – under Build Zone but classified as Agriculture
- Relocation Plans:
  - No relocation plans







# Existing House Typologies

*Types of houses and materials used*



# Existing House Typologies:

Brgy. Ugpong, Valladolid (Loboc)  
and Badiang (Inabanga)

- Timber
- Concrete
- Mixed

- > 95% of Totally damaged houses are Timber and Light materials
- Majority of the homeowners prefers to rebuild their houses using concrete/masonry if funding is available





# House built after 2013 Bohol Earthquake



**Houses built after the 2013 Bohol earthquake made out of Mixed Masonry and Timber wall were fully damaged by Typhoon Odette**

# Construction Materials

- Concrete Hollow Blocks (CHB) 6" - Php 25-31/piece
- Sand - Php 1175-1795/m<sup>3</sup>
- Gravel - Php 1550-1795/m<sup>3</sup>
- Cement - Php 227-265/bag
- 12mm RSB - Php 317-322/piece
- 10mm RSB - Php 220-240/piece
- 2x4x12' Good Lumber - Php 608/piece
- 2X6X12' Good Lumber - Php 1200/piece
- Marine Plywood - Php 790-798/piece







## Recommendation



# Recommendation

**Option 1 - On-site rebuilding of fully damaged house in Brgy. Badiang, Inabanga**

**Option 2 - Relocation of residents affected in Barangay Valladolid and Ugpong**

**Option 3 - Partner with Loboc International for the relocation of affected residents to identified lots owned by residents and/or relatives**







# Proposed House Design

## 1 Story Concrete House

(Light Roof)

**Project Description:** Proposed design of One Story Concrete Core House, with the following features:

- Indoor kitchen
- Wooden doors and windows
- Plastered walls inside and outside
- Smooth concrete finish flooring
- With basic electricals and devices
- With basic plumbing and accessories

**House Floor Area:** 16 sq.m



# Cost Summary per unit

	Light Roof	Slab Roof
Materials Cost	Php 280,000	Php 270,000
Labor (30% of Materials Cost)	Php 84,000	Php 81,000
Hauling (5% of Materials Cost)	Php 14,000	Php 13,500
Contingency (5% of Materials Cost + Labor + Hauling)	Php 18,900	Php 18,225
<b>Total</b>	<b>Php 396,900 (USD 7,938)*</b>	<b>Php 382,725 (USD 7,655)*</b>
Cost/sqm	Php 24,806.25	Php 23,920.31

\* USD 1 = Php 50

## Optional:

Horizontal Expansion provision = Php 11,000

Vertical Expansion provision = Php 14,000







Thank you!

