



CHAND ENGINEERING CONSULTANTS LTD.

CONSULTING ENGINEERS & PROJECT MANAGERS

**CYCLONE WINSTON PRELIMINARY ASSESSMENT
SCHOOLS, HEALTH FACILITIES AND PUBLIC BUILDINGS
FOR
FIJI INSTITUTION OF ENGINEERS &
DEPARTMENT OF NATIONAL PLANNING
(MINISTRY OF FINANCE)**



NAME OF FACILITY: Naweni District School
TYPE: Primary School
LOCATION: Naweni, Vanua Levu
DATE OF ASSESSMENT: 21 March 2016

JOB NO: 16-119
GOVERNMENT FACILITY NUMBER: GFN-194

DISCLAIMER: THIS REPORT HAS BEEN PREPARED FOR THE BENEFIT OF FIJI INSTITUTION OF ENGINEERS & MINISTRY OF FINANCE TO ESTABLISH THE EXTENT OF DAMAGES BASED ON A HIGH LEVEL PRELIMINARY ASSESSMENT. IN NO CIRCUMSTANCES IS THE REPORT TO BE USED FOR SCOPING OR ESTABLISHMENT OF DETAILED COSTS FOR DAMAGES. NO RESPONSIBILITY SHALL BE TAKEN FOR ANY INCORRECT OR INCOMPLETE INFORMATION DUE TO THE SHORT TIME IN CARRYING OUT THE INITIAL ASSESSMENT AS PART OF VOLUNTARY PRO-BONO SERVICE OFFERED BY CHAND ENGINEERING CONSULTANT LTD. DETAILED ASSESSMENT SHOULD BE CARRIED OUT FOR DETAILED COST AND SCOPE FOR REPAIR AND REINSTATEMENT WORKS

**RAPID ASSESSMENT TEMPLATE: CYCLONE WINSTON DAMAGED BUILDINGS
SCHOOLS, PUBLIC BUILDINGS & HEALTH FACILITIES**

INSPECTOR: Abhinesh/Sohnal/Sajneel
FIRM/COMPANY: Chand Engineering Consultants Limited

GENERAL INFORMATION

Building Name: Naweni District School
Type: School Block
Location: Naweni, Vanua Levu
No. of Buildings: 11
Ariel Plan Available: **YES / NO**

REPORT

Page No. : 1
Building No. : 1
Building Approx Age: approx 30 years old
No. of Storeys: Single storey

Extent of Damage Rating Description

1	Minor/Cosmetic/Water
2	Some Damage
3	Extensive but Repairable
4	Irreparable

Types of Buildings

- School Block
- Staff Quarters
- Toilet Block
- Utility Building (FEA, Services, etc)
- Divisional Hospital
- Sub-Divisional Hospital
- Health Centre
- Nursing Station
- Public Building or Facility

EVALUATION

Type of Construction	Description	Build Quality	Damage	Extent of Damage Rating	Photo No.
Floor	Timber flooring on timber joist and bearer	1 Good 2 Average 3 Poor	Few damages due to water damage there is no proper connections shown for the members	3	N/A
Foundations	Concrete post supporting timber bearers	1 Good 2 Average 3 Poor	Concrete post has cracks all around and at few places the steel is exposed	3	1
Walls	Timber wall out of 100x50 studs at 600crs with horizontal weather board	1 Good 2 Average 3 Poor	Wall have been twisted, due to lack of lateral support the walls are bend towards inside	3	2
Rafters	Made out of timber truss	1 Good 2 Average 3 Poor	Severe damage to classroom blocks with approx 70% of roof from truss purlins to roof cladding blown away	3	N/A
Purlins	timber purlins nailed to truss	1 Good 2 Average 3 Poor	Severe damage to classroom blocks approx 70% of roof blown away	3	N/A
Roof	Corregetd G.I strappings with nails all over the roof area	1 Good 2 Average 3 Poor	70% of the roof blown away	3	3
Electrical	Typical standard switches, GPO's and fluorescents tube light and bulbs	1 Good 2 Average 3 Poor	No damage known- FEA power not available at the time of inspection	0	N/A
Hydraulics	None	1 Good 2 Average 3 Poor	N/A	0	N/A
Windows/Doors	Louvers windows (panel glass) on standard carries typically for all windows. Combination of timber doors with fixed glass and T&G lined doors in T&G framings	1 Good 2 Average 3 Poor	No damages	1	N/A
Shutters	Temperately 225 mesh shutters	1 Good 2 Average 3 Poor	shutter missing at many glass openings	3	N/A
Ceilings	Ply board ceilings throughout	1 Good 2 Average 3 Poor	70% of the ceiling blown out	2	N/A
Terraces/Verandah	Verandah with timber post and beam	1 Good 2 Average 3 Poor	70% of verandah blown away with few post and beam with it.	3	4
Tiles/Floor Covering	Floor carpet has water damages	1 Good 2 Average 3 Poor	100% carpets has water damages	3	N/A
Gutters	Not visible -must have been blown away	1 Good 2 Average 3 Poor	100% blown away	3	N/A
Downpipes	Not visible -must have been blown away	1 Good 2 Average 3 Poor	100% blown away	3	N/A
Fascia Boards	Timber fascia board	1 Good 2 Average 3 Poor	approx 80% blown away	3	N/A
Furniture/Desks etc.	Not shown- must have been moved to another building and water damaged onces removed	1 Good 2 Average 3 Poor	most have been water damaged	2	N/A
Possible Intermediate Solution	Hole building to be demolished and rebuild (40x 9m), this is because of the cracks on the post and walls have bended and very poor connection of the remind structure. Note this building was used as equation centre for around 3-4 villages.				
Possible Long Term Solution	Intermediate solution is the long term solution				

Damage Assessment (\$) \$450,000.00

Basis of Calculation TBC

FEES ESTIMATE:

Design/Documentation: TBC

Tender/Approval: TBC

Inspection/End Construction: TBC

**RAPID ASSESSMENT TEMPLATE: CYCLONE WINSTON DAMAGED BUILDINGS
SCHOOLS, PUBLIC BUILDINGS & HEALTH FACILITIES**

INSPECTOR: Abhinesh/Sohnal/Sajneel
FIRM/COMPANY: Chand Engineering Consultants Limited

GENERAL INFORMATION

Building Name: Naweni District School
Type: School Block
Location: Naweni, Vanua Levu
No. of Buildings: 11
Ariel Plan Available: **YES / NO**

REPORT

Page No. : 2
Building No. : 2
Building Approx Age: approx 30 years old
No. of Storeys: Single storey

Extent of Damage Rating Description

1	Minor/Cosmetic/Water
2	Some Damage
3	Extensive but Repairable
4	Irreparable

Types of Buildings

- School Block
- Staff Quarters
- Toilet Block
- Utility Building (FEA, Services, etc)
- Divisional Hospital
- Sub-Divisional Hospital
- Health Centre
- Nursing Station
- Public Building or Facility

EVALUATION

Type of Construction	Description	Build Quality	Damage	Extent of Damage Rating	Photo No.
Floor	Concrete slab on ground	1 Good 2 Average 3 Poor	No visible damaged to floor	1	N/A
Foundations	No visible	1 Good 2 Average 3 Poor	No visible damaged-conceald and at few places the steel is exposed	0	N/A
Walls	Assumed timber wall 100% blown away	1 Good 2 Average 3 Poor	100% blown away	3	2
Rafters	Not known completely blown away	1 Good 2 Average 3 Poor	100% blown away	3	N/A
Purlins	Not known completely blown away	1 Good 2 Average 3 Poor	100% blown away	3	N/A
Roof	Corregetd G.I strappings with nails all over the roof area	1 Good 2 Average 3 Poor	100% blown away	3	3
Electrical	Typical standard switches, GPO's and fluorescents tube light and bulbs	1 Good 2 Average 3 Poor	100% blown away	0	N/A
Hydraulics	None	1 Good 2 Average 3 Poor	N/A	0	N/A
Windows/Doors	Louvers windows (panel glass) on standard carries typically for all windows. Combination of timber doors with fixed glass and T&G lined doors in T&G framings	1 Good 2 Average 3 Poor	100% blown away	0	N/A
Shutters	Temperately 225 mesh shutters	1 Good 2 Average 3 Poor	100% blown away	0	N/A
Ceilings	Ply board ceilings throughout	1 Good 2 Average 3 Poor	100% blown away	3	N/A
Terraces/Verandah	Verandah with timber post and beam	1 Good 2 Average 3 Poor	100% blown away	3	4
Tiles/Floor Covering	Floor carpet has water damages	1 Good 2 Average 3 Poor	100% carpets has water damages	3	N/A
Gutters	Not visible -must have been blown away	1 Good 2 Average 3 Poor	100% blown away	3	N/A
Downpipes	Not visible -must have been blown away	1 Good 2 Average 3 Poor	100% blown away	3	N/A
Fascia Boards	Timber fascia board	1 Good 2 Average 3 Poor	100% blown away	3	N/A
Furniture/Desks etc.	Not shown- must have been roved to another building and water damaged onces removed	1 Good 2 Average 3 Poor	All are water damaged	3	N/A
Possible Intermediate Solution	Hole building to be rebuild (15x 5m).				
Possible Long Term Solution	Intermediate solution is the long tem solution				

Damage Assessment (\$) \$95,000.00
Basis of Calculation TBC

FEES ESTIMATE:

Design/Documentation: TBC
Tender/Approval: TBC
Inspection/End Construction: TBC

**RAPID ASSESSMENT TEMPLATE: CYCLONE WINSTON DAMAGED BUILDINGS
SCHOOLS, PUBLIC BUILDINGS & HEALTH FACILITIES**

INSPECTOR: Abhinesh/Sohnal/Sajneel
FIRM/COMPANY: Chand Engineering Consultants Limited

GENERAL INFORMATION

Building Name: Naweni District School
Type: Staff Quarters
Location: Naweni, Vanua Levu
No. of Buildings: 11
Ariel Plan Available: YES/ NO

REPORT

Page No. : 3
Building No. : 3
Building Approx Age: approx 30 years old
No. of Storeys: Single storey

Extent of Damage Rating Description

1	Minor/Cosmetic/Water
2	Some Damage
3	Extensive but Repairable
4	Irreparable

Types of Buildings

School Block
Staff Quarters
Toilet Block
Utility Building (FEA, Services, etc)
Divisional Hospital
Sub-Divisional Hospital
Health Centre
Nursing Station
Public Building or Facility

EVALUATION

Type of Construction	Description	Build Quality			Damage	Extent of Damage Rating	Photo No.
		1	2	3			
Floor	Concrete slab on ground	1 2 3	Good Average Poor	No damage	0	N/A	
Foundations	No visible	1 2 3	Good Average Poor	No Damage	0	N/A	
Walls	Timber wall out of 100x50 studs at 600crs with horizontal weather board	1 2 3	Good Average Poor	No damaged	1	5,6	
Rafters	Not visible- out of timber or timber truss	1 2 3	Good Average Poor	approx 40% of roof blown away	2	N/A	
Purlins	No visible-timber purlins nailed to rafter or truss	1 2 3	Good Average Poor	approx 40% of roof blown away	2	N/A	
Roof	Corregetd G.I strappings with nails all over the roof area	1 2 3	Good Average Poor	approx 40% of roof blown away	2	N/A	
Electrical	Typical standard switches, GPO's and fluorescents tube light and bulbs	1 2 3	Good Average Poor	No damage known- FEA power not available at the time of inspection	0	N/A	
Hydraulics	None	1 2 3	Good Average Poor	N/A	0	N/A	
Windows/Doors	Louvers windows (panel glass) on standard carries typically for all windows. Combination of timber doors with fixed glass and T&G lined doors in T&G framings	1 2 3	Good Average Poor	No damages	0	N/A	
Shutters	Temperately 225 mesh shutters	1 2 3	Good Average Poor	shutter missing at many glass openings	0	N/A	
Ceilings	Ply board ceilings throughout	1 2 3	Good Average Poor	40% of the ceiling blown out	2	N/A	
Terraces/Verandah	Verandah with timber post and beam	1 2 3	Good Average Poor	40% of verandah blown away with beam with it.	2	6	
Tiles/Floor Covering	Floor carpet has water damages	1 2 3	Good Average Poor	100% carpets has water damages	1	N/A	
Gutters	Not visible -must have been blown away	1 2 3	Good Average Poor	100% blown away	2	N/A	
Downpipes	Not visible -must have been blown away	1 2 3	Good Average Poor	100% blown away	2	N/A	
Fascia Boards	Timber fascia board	1 2 3	Good Average Poor	approx 80% blown away	2	N/A	
Furniture/Desks etc.	Not shown- water damaged must have been removed	1 2 3	Good Average Poor	No Damage	2	N/A	
Possible Intermediate Solution	Re-construct the verandah roof beam and totally new verandah roof in compliant to the NBCF with new roof trusses, purlins and new ceiling. Replace all broken glass panes and louver blades and repair with grout crack in wall. New guttering, downpipes, flashings, fascia boards.						
Possible Long Term Solution	Detailed investigation for roof framing recommended along with checks on wall capacity for uplift/lateral loads for more tolerance towards Cat.4. Much dependent upon detailed investigation by an Engineer. Considering the building age and with verandah roof and verandah roof beam blown out, possibly demolish and re-build the whole roof to comply with NBCF. Estimated cost currently around \$45,000.00 (new verandah roof with beam) to \$80,000 (new roof with retrofit to wall for better capacity) for long term solution.						

Damage Assessment (\$) \$5,000.00
Basis of Calculation Engineer estimate-TBC

FEES ESTIMATE:

Design/Documentation: TBC
Tender/Approval: TBC
Inspection/End Construction: TBC

**RAPID ASSESSMENT TEMPLATE: CYCLONE WINSTON DAMAGED BUILDINGS
SCHOOLS, PUBLIC BUILDINGS & HEALTH FACILITIES**

INSPECTOR: Abhinesh/Sohnal/Sajneel
FIRM/COMPANY: Chand Engineering Consultants Limited

GENERAL INFORMATION

Building Name: Naweni District School
Type: Staff Quarters
Location: Naweni, Vanua Levu
No. of Buildings: 11
Ariel Plan Available: YES / NO

REPORT

Page No. : 4
Building No. : 4
Building Approx Age: approx 30 years old
No. of Storeys: Single storey

Extent of Damage Rating Description

1	Minor/Cosmetic/Water
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Types of Buildings

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EVALUATION

Type of Construction	Description	Build Quality		Damage	Extent of Damage Rating	Photo No.
Floor	Timber flooring on timber joist and bearer	1 2 3	Good Average Poor	No damage	0	N/A
Foundations	Timber post supporting timber bearers	1 2 3	Good Average Poor	No Damage	0	N/A
Walls	Timber wall out of 100x50 studs at 600cra with vertical wall cladding	1 2 3	Good Average Poor	No damaged	1	5,6
Rafters	Not visible- out of timber or timber truss	1 2 3	Good Average Poor	approx 40% of roof blown away	2	N/A
Purlins	No visible-timber purlins nailed to rafter or truss	1 2 3	Good Average Poor	approx 40% of roof blown away	2	N/A
Roof	Corregtd G.I strappings with nails all over the roof area	1 2 3	Good Average Poor	approx 40% of roof blown away	2	N/A
Electrical	Typical standard switches, GPO's and fluorescents tube light and bulbs	1 2 3	Good Average Poor	No damage known- FEA power not available at the time of inspection	0	N/A
Hydraulics	None	1 2 3	Good Average Poor	N/A	0	N/A
Windows/Doors	Louvers windows (panel glass) on standard carries typically for all windows. Combination of timber doors with fixed glass and T&G lined doors in T&G framings	1 2 3	Good Average Poor	No damages	0	N/A
Shutters	Temperately 225 mesh shutters	1 2 3	Good Average Poor	shutter missing at many glass openings	0	N/A
Ceilings	Ply board ceilings throughout	1 2 3	Good Average Poor	40% of the ceiling blown out	2	N/A
Terraces/Verandah	Verandah with timber post and beam	1 2 3	Good Average Poor	40% of verandah blown away with beam with it.	2	6
Tiles/Floor Covering	Floor carpet has water damages	1 2 3	Good Average Poor	100% carpets has water damages	1	N/A
Gutters	Not visible -must have been blown away	1 2 3	Good Average Poor	100% blown away	2	N/A
Downpipes	Not visible -must have been blown away	1 2 3	Good Average Poor	100% blown away	2	N/A
Fascia Boards	Timber fascia board	1 2 3	Good Average Poor	approx 80% blown away	2	N/A
Furniture/Desks etc.	Not shown- water damaged must have been removed	1 2 3	Good Average Poor	No Damage	2	N/A
Possible Intermediate Solution	Re-construct the verandah roof beam and totally new verandah roof in compliant to the NBCF with new roof trusses, purlins and new ceiling. Replace all broken glass panes and louver blades and repair with grout crack in wall. New guttering, downpipes, flashings, fascia boards.					
Possible Long Term Solution	Detailed investigation for roof framing recommended along with checks on wall capacity for uplift/lateral loads for more tolerance towards Cat.4. Much dependent upon detailed investigation by an Engineer. Considering the building age and with verandah roof and verandah roof beam blown out, possibly demolish and re-build the whole roof to comply with NBCF. Estimated cost currently around \$50,000.00 (new verandah roof with beam) to \$80,000 (new roof with retrofit to wall for better capacity) for long term solution.					

Damage Assessment (\$) \$8,000.00
Basis of Calculation Engineer estimate-TBC

FEES ESTIMATE:

Design/Documentation: TBC
Tender/Approval: TBC
Inspection/End Construction: TBC

PHOTOS- BUILDING 1



Photo 1: Side view of the building that is damaged



Photo 2: Overall frontage view of the building that is damaged



Photo 3: Enlarge view of the damage walls



Photo 4: Damaged concrete post

PHOTOS- BUILDING 2



Photo 5: Overall building photos that totally blown away



Photo 6: Enlarge view of the that was blown away

PHOTOS- BUILDING 3



Photo 7: Overall building photos that totally blown away



Photo 8: View of verandah the that was blown away

PHOTOS- BUILDING 4



Photo 9: Overall building photos for partly damaged staff quarters



Photo 10: Enlarge view of the part that was blown away