CHAND ENGINEERING CONSULTANTS LTD.

CONSULTING ENGINEERS & PROJECT MANAGERS

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

NAME OF FACILITY: Ra HIgh School
TYPE: College
LOCATION: Rakiraki
DATE OF ASSESMENT: 22 March 2016

JOB NO: 16-117
GOVERNMENT FACILITY NUMBER: GFN-019

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

INSPECTOR: AAC/ AAD/ RK

FIRM/COMPANY: CHAND ENGINEERING CONSULTANTS LIMITED

Extent of Damage Rating Description

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

GENERAL INFORMATION

Building Name: Ra High School

Type: School Block

Location: Rakiraki

No. of Buildings: 6

Ariel Plan Available: ~~**YES**~~ **/ NO**

REPORT

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Building No. : 1

Building Approx Age: 40 years + (established 1970)

No. of Storeys: 1

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 on concrete post	1 2 3	Good Average Poor	3 buildings are 100% damaged	4	N/A
Foundations	Not visible	1 2 3	Good Average Poor	No visible damage-concealed	0	2
Walls	combination of 150mm blockwall and timber cladding	1 2 3	Good Average Poor	2 buildings are 100% damaged and 1 building has a fallen wall with signs of crack on the other.	4	1,4,5
Rafters	150 x 50mm timber rafters	1 2 3	Good Average Poor	2 buildings are 100% damaged with roof blown out of the other 2 buildings.	4	4
Purlins	75 x 50mm timber purlins	1 2 3	Good Average Poor	2 buildings are 100% damaged with roof blown out of the other 2 buildings.	3	4
Roof	corrugated roof cladding with 60% blown out.	1 2 3	Good Average Poor	2 buildings are 100% damaged with roof blown out of the other 2 buildings.	4	1,4
Electrical	typical standard switches, GPO's and fluorescent tubelights and bulbs.	1 2 3	Good Average Poor	3 buildings 100% damaged	4	N/A
Hydraulics	None	1 2 3	Good Average Poor	N/A	N/A	N/A
Windows/Doors	louver windows on standard carriers typically for all windows and timber doors.	1 2 3	Good Average Poor	3 buildings are 100% damaged	4	1,4
Shutters	50 x 50mm mesh observed for a few windows - no shutters also observed to a few windows	1 2 3	Good Average Poor	windows with shutters has no damage	0	3
Ceilings	Ply board ceiling typically throughout-50% is blown out of main classroom and the rest of the ceiling is water damaged.	1 2 3	Good Average Poor	4 buildings are 100% damaged other buildings have water damage	4	N/A
Terraces/Verandah	concrete floor with 50mm diameter steel post.	1 2 3	Good Average Poor	3 buildings with 100% verandah damage. Others have roof blown out.	3	2
Tiles/Floor Covering	Concrete plaster and with ceramic tiles	1 2 3	Good Average Poor	Cracks observed	2	N/A
Gutters	Standard PVC gutters with proprietartary PVC straps fixed to the outside of the gutter with 90% blown out	1 2 3	Good Average Poor	100% damage	4	1,4,5
Downpipes	100mm PVC downpipes with PVC straps fixed to the wall with 90% blown out.	1 2 3	Good Average Poor	100% damage	4	1,4,5
Fascia Boards	250x30mm timber fascia board.	1 2 3	Good Average Poor	70% damage	3	1,4
Furniture/Desks etc.		1 2 3	Good Average Poor			
Possible Intermediate Solution	Re-construct the fallen wall and the roof of the school blocks in accordance to the NBCF with new roof trusses, purlins, fascia, gutters, downpipes. Risks involved- potential roof failure to the other sides in future events.					
Possible Long Term Solution	N/A					

Damage Assessment ($) $200,000.00 Intermediate

Basis of Calculation Engineers Estimate-TBC (note can be QS assisted)

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: AAC/ AAD/ RK
FIRM/COMPANY: CHAND ENGINEERING CONSULTANTS LIMITED

Extent of Damage Rating Description

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

GENERAL INFORMATION
Building Name: Ra High School
Type: Staff Quarters
Location: Rakiraki
No. of Buildings: 21
Ariel Plan Available: ~~YES~~ / **NO**

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

REPORT
Page No. : 2
Building No. : 2
Building Approx Age: 40 years + (established 1970)
No. of Storeys: 1

EVALUATION

Type of Construction	Description	Build Quality		Damage	Extent of Damage Rating	Photo No.
Floor	combination of timber floor and concrete floor.	1 2 3	Good Average Poor	6 quarters 100% damaged and the remaining has temporary covers	4	6
Foundations	Not visible.	1 2 3	Good Average Poor	6 quarters 100% damaged and the remaining has temporary covers	4	N/A
Walls	combination of timber cladding, corrugated cladding and 150mm blockwall	1 2 3	Good Average Poor	6 quarters 100% damaged and the remaining has temporary covers	4	6
Rafters	100x50 timber rafter	1 2 3	Good Average Poor	6 quarters 100% damaged and the remaining has temporary covers	4	N/A
Purlins	75x50 timber purlins	1 2 3	Good Average Poor	6 quarters 100% damaged and the remaining has temporary covers	4	N/A
Roof	corrugated roof cladding	1 2 3	Good Average Poor	6 quarters 100% damaged and the remaining has temporary covers	4	6
Electrical	typical standard switches, GPO's and fluorescent tubelights and bulbs.	1 2 3	Good Average Poor	6 quarters 100% damaged and the remaining has temporary covers	4	N/A
Hydraulics	None	1 2 3	Good Average Poor	N/A	N/A	N/A
Windows/Doors	louver windows on standard carriers typically for all windows and timber doors.	1 2 3	Good Average Poor	6 quarters 100% damaged and the remaining has temporary covers	4	6
Shutters	50 x 50 mesh obseved on windows - no shutters also observed to few windows	1 2 3	Good Average Poor	6 quarters 100% damaged and the remaining has temporary covers	4	6
Ceilings	Ply board ceiling typically throughout- 4 quarters is blown out and the remaining of the ceiling is water damaged-painted	1 2 3	Good Average Poor	6 quarters 100% damaged and the remaining has temporary covers	4	N/A
Terraces/Verandah	Concrete floor with 50mm steel post	1 2 3	Good Average Poor	6 quarters 100% damaged and the remaining has temporary covers	4	N/A
Tiles/Floor Covering	concrete plaster	1 2 3	Good Average Poor	6 quarters 100% damaged and the remaining has temporary covers	4	7
Gutters	Standard PVC gutters with proprietartary PVC straps fixed to the outside of the gutter.	1 2 3	Good Average Poor	6 quarters 100% damaged and the remaining has temporary covers	4	6
Downpipes	Downpipes blown out.	1 2 3	Good Average Poor	6 quarters 100% damaged and the remaining has temporary covers	4	6
Fascia Boards	250x30mm timber fascia board.	1 2 3	Good Average Poor	6 quarters 100% damaged and the remaining has temporary covers	4	6
Furniture/Desks etc.		1 2 3	Good Average Poor			
Possible Intermediate Solution	re-construct the 6 blown out quarters and re-construct the roof of the damaged buildings in accordance to the NBCF with new roof trusses, walls, foundations, purlins, gutters downpipes, fascia. Damaged buildings to have new flashings, fascia, gutterings, donwnpipes with retrofits.					
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 the 6 of the timber structure blown out possibly demolish and re-built all the quarters to comply with NBCF. Estimated cost currently around $200,000.00 for all new quarters with					

Damage Assessment ($) $250,000.00 Intermediate
Basis of Calculation Engineers Estimate-TBC (note can be QS assisted)

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: AAC/ AAD/ RK
FIRM/COMPANY: CHAND ENGINEERING CONSULTANTS LIMITED

Extent of Damage Rating Description

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

GENERAL INFORMATION
Building Name: Ra High School
Type: Toilet Block
Location: Rakiraki
No. of Buildings: 1
Ariel Plan Available: **YES / NO**

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

REPORT
Page No. : 1
Building No. : 3
Building Approx Age: 60 years + (established 1955)
No. of Storeys: 1

EVALUATION

Type of Construction	Description	Build Quality		Damage	Extent of Damage Rating	Photo No.
Floor	reinforced concrete slab on ground.	1 2 3	Good Average Poor	No visible damage	0	N/A
Foundations	Not visible	1 2 3	Good Average Poor	Not Visible - concealed	0	N/A
Walls	150mm blockwall	1 2 3	Good Average Poor	Signs of crack	3	8
Rafters	Not visible	1 2 3	Good Average Poor	Not Visible	1	8,9
Purlins	Not visible	1 2 3	Good Average Poor	Not Visible	1	8,9
Roof	Corrugated roof cladding	1 2 3	Good Average Poor	50% roof blown out	3	8
Electrical	typical standard switches, GPO's and fluorescent tubelights and bulbs.	1 2 3	Good Average Poor	N/A	0	N/A
Hydraulics	N/A	1 2 3	Good Average Poor	N/A	N/A	
Windows/Doors	louver windows on standard carriers typically for all windows and timber doors.	1 2 3	Good Average Poor	Water damaged	1	8,9
Shutters	N/A	1 2 3	Good Average Poor	No shutters	0	8,9
Ceilings	Ply board ceiling typically throughout- water damaged and painted	1 2 3	Good Average Poor	Water damaged	1	9
Terraces/Verandah	N/A	1 2 3	Good Average Poor	N/A	0	N/A
Tiles/Floor Covering	Ceramic tile and concrete plaster on walkway	1 2 3	Good Average Poor	No visible damage	0	N/A
Gutters	Completely blown out	1 2 3	Good Average Poor	100% damaged	4	8
Downpipes	Completely blown out	1 2 3	Good Average Poor	100% damaged	4	8
Fascia Boards	250 x 30mm timber fascia	1 2 3	Good Average Poor	No damage	4	8
Furniture/Desks etc.		1 2 3	Good Average Poor			
Possible Intermediate Solution	Re-construct the whole roof of the toilet blocks and plaster the cracks in accordance to the NBCF with new roof trusses, purlins, gutters, downpipes, fascia, flashings and shutters.					
Possible Long Term Solution	N/A					

Damage Assessment ($) $10,000.00 Intermediate
Basis of Calculation Engineers Estimate-TBC (note can be QS assisted)

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

GENERAL DAMAGE
SCHOOLS, PUBLIC BUILDINGS & HEALTH FACILITIES

INSPECTOR: AAC/AAD/RK

FIRM/COMPANY: Chand Engineering Consultants Limited

GENERAL INFORMATION

Building Name: Ra High School

Location:

No. of Buildings: 11

Ariel Plan Available: **YES / NO**

1 FENCING / GATES / DRIVEWAY / RETAINING WALLS ETC (INCLUDE TYPE / LENGTH ETC)
Walkway leading to the toilet block for the classrooms is 100% damaged.
Walkway leading to the clasrooms from the entrance is tilted to 1 side and whole roof is blown out.

2 WATER TANKS/METERS/PLUMBING
N/A

3 POWER LINES / METERS / WIRING
Wiring has to be re-placed and re-wired with electricity. Wires are fallen on the ground.

4 OTHER ITEMS
Currently, all the classes are being run in the temporary repaired classroms and in the undamaged classrooms. Long term solution would require decent time of 6 months to 1 year of
staged construction depending on material availability for a complete long term solution subject to additional cost consideration. Depending on immediate need and capacity,
minimum 6 months construct the new buildings for the main school building for full use again and 6 month to construct the new teachers quarters, 1 month for the construction for the
tiolet blocks and 2 months of construction of the walkway and general repairs.

TOTAL COST ESTIMATE:

DESCRIPTION	FEE
School Building	$150,000.00
Staff Quarters	$100,000.00
Toilet Blocks	$10,000.00
General	$40,000.00
TOTAL:	**$300,000.00**

TOTAL FEE ESTIMATE:

DESCRIPTION	FEE
TBC	**TBC**
TBC	**TBC**
TBC	**TBC**
TBC	**TBC**
TOTAL:	

PHOTOS- BUILDING 1

Photo 1:View of the School

Photo 2: View 100% damaged Building

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Photo 3: View of 100% Damaged Building

Photo 4:View of the Repairs being done at Block B

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Photo 5: Fallen Wall of the School Block

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PHOTO-BUILDING 2

Photo 6: View of the Teachers Quarters with Damaged Roof

Photo 7: View of the 100% Damaged Teachers Quarters

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PHOTOS- BUILDING 3

Photo 8: View of the Toilet Blocks

Photo 9: View of the Crack in Toilet Block

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GENERAL SITE PHOTOS

Photo 10: View of the Walkway from the Classroom to the Toilet Block

Photo 11: View of the Toilet Block Walkway

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Photo 12: Teachers Living in Quarters

Photo 13: View of the Main Entrance to the School

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