FIJI ELECTRICITY AUTHORITY
TENDER DOCUMENT

Addendum # 1

TENDER NUMBER: MR232/2017

TENDER NAME: Rust Treatment and Refurbishment of Communication Towers

REVISED TENDER CLOSING: 4pm on Wednesday, 17th of January, 2018

Note: Bidder's are to read and interpret this Addendum in conjunction with the original tender document.

This addendum # 1 to FEA Tender # MR232/2017 serves to clarify the questions posed by interested bidders during the site visits conducted 31/10/2017 thru 03/11/2017

Question 1:	FEA to confirm any steel replacement requirements?
Response:	Yes, the workscope entails steel replacement as part of the workscope. The quantity of steel to be replaced is documented in the condition assessment report compiled by FEA's consultant. This report is herewith attached as Appendix # 1. The successful contractor shall be required to procure steel identical to existing, and fabricate items and install on the towers. All steel which has been replaced needs to be transported back to the nearest FEA depot for disposal.
Question 2:	FEA to confirm whether bidders are to factor the Customs Charges, Import Tariffs, Customs Duty and Taxes for materials and equipment to be supplied and installed under this contract?
Response:	Yes, bidders are to submit prices which are inclusive of all duties and taxes applicable on this project. Bidders are to consult the Fiji Revenue and Customs Service (FRCS) for exact duty and tax requirements. The following link on FRCS's website clarifies the customs charges, Import Tariffs, Duties, and Taxes. http://www.frcs.org.fj/customs-charges-and-duties/ Information regarding all other taxation requirements can be clarified with FRCS prior to submitting bids.
Question 3:	FEA to confirm that Access Roads construction and maintenance works are not included in the scope of works of this tender.
Response:	FEA, confirms that the Access Roads shall be provided by others and facilitated at the sole cost of FEA. Access roads shall be constructed as and where required for four wheel drive access.

Question 4:	FEA to confirm the quantity of sweep blast and full blast requirement at each tower.
Response:	The quantity (m^2) of sweep blast and full blast is documented in the condition assessment report compiled by FEA's consultant. This report is herewith attached as Appendix 1.
Question 5:	FEA to confirm that the redundant communications equipment mounted on towers has to be dismantled and returned to FEA.
Response:	Yes, Most towers have redundant communications equipment such as antenna which are not in service. While executing works the contractor will be required to uninstall / dismantle such equipment under FEA supervision and safely lower these items / equipment to the ground. The items / equipment will be handed over by the contractor and received onsite by FEA for transportation and safekeeping.

Appendix # 1: Condition Assessment Report

FEA COMMUNICATIONS TOWERS - SUMMARY AND REPORTS

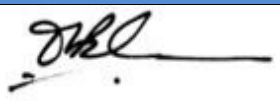
Item #	Site Name	Island	Region	Direction - Summary	Co-ordinates		Estimated Tower Area M²	Estimated Abrasive blast area M²
					Latitude	Longitude		
1	Delaikoro	Vanua Levu	Northern	20km south of Labasa Airport	16°35'22.45"S	179°19'0.88"E	400	220
2	Cunningham	Viti Levu	Central	Suva - 6km north of city centre	18° 6'16.00"S	178°27'26.09"E	60	20
3	Kinoya	Viti Levu	Central	Suva - power station	18° 6'43.32"S	178°28'40.90"E	175	85
4	Nakobalevu	Viti Levu	Central	8km west of Suva	18° 3'39.97"S	178°24'58.65"E	525	485
5	Kavukavu	Viti Levu	Western	On Mt. Kavukavu	17°58'8.84"S	177°17'52.09"E	160	20
6	Lololo	Viti Levu	Western	18km North East of Lautoka	17°33'52.94"S	177°36'47.06"E	525	20
7	Navutu	Viti Levu	Western	FEA depot Lautoka	17°37'41.90"S	177°25'52.67"E	85	10
8	Vuda	Viti Levu	Western	Vuda Power station - Lautoka	17°40'31.02"S	177°26'1.77"E	250	10
9	Taladrau	Viti Levu	Western	Near Monasavu Hydro	17°45'10.31"S	178° 4'21.77"E	425	385
10	Wailoa	Viti Levu	Western	Switchyard at Wailoa power station	17°44'27.87"S	178° 6'11.66"E	160	20

3rd July 2017

Quality Information

Document	**INSPECTION REPORT** Delaikoro Tower Assessment
Our Reference:	CAP14031
Client's Reference:	Various
Date:	3rd July 2017
Prepared for:	Pushkar Chandar Awasthi
Prepared by:	Tim Greenhill (Pacific Corrosion Consultants Ltd) Consultant Mob Ph, (+64) 212929199 email address: timothy.greenhill@pacific-corrosion.com
Reviewed by:	Mike Boardman (Pacific Corrosion Consultants Ltd) Director, Corrosion Technologist mob Ph, (+64) 21906684 email address: mike.boardman@linetech.co.nz

Revision History

Revision	Revision Date	Details	Authorised	
			Name	Signature
		FINAL	M A Boardman	

INTRODUCTION

Background

This document consists of the findings of a recently completed condition assessment carried out on the Delaikoro Communications Tower. Also included are a series of images to support the findings.

Location

The tower is located up a long steep track just out of Lambasa

GPS

16°35’22.96”S

179°18’58.87”E

Inspection Methodology

Utilizing a fall arrest climbing system the inspectors were able to carry out a visual assessment of the entire structure and the components and attachments.

The inspection consisted of a visual appraisal of the galvanized steel condition using an internal version of our company’s tower condition assessment procedure.

To supplement the visual inspection, a large portfolio of photographs was taken for both reporting and reference purposes.

CONDITION ASSESSMENT

Tim Greenhill and Wilson Nahi performed a condition assessment on the Delaikoro tower on the 20th June 2017. The tower is in a poor overall condition. The corrosion rapidly increases higher up in the structure due to sitting in fog. No R/C tower members at the date of inspection but this will increase in the future if not refurbished

Redundant Communications Gear.

There are a number of redundant brackets and tubes attached to the structure that can be removed

Area Data Body

Type	Red Rust	Alloying (Sound Galvanizing)	ZCP (Zinc Corrosion Product)
Main	1/16	3/16	1/16
Minor	25%	35%	15%

Upper Body

Type	Red Rust	Alloying (Sound Galvanizing)	ZCP (Zinc Corrosion Product)
Main	4/16	2/16	2/16
Minor	75%	5%	2%

Notes

500 R/C M16 bolts on tower 120 M24 bolts R/C some missing

First ladder platform loose and second ladder run the cage is R/C

Lightning Rod holding clamps R/C

Recommendations

It is suggested that the R/C bolts be changed and the tower re torqued to make it safe to climb. Remove the redundant communication brackets.

Area Take Offs - Total Area Estimate 400m^2

Secondary Preparation area 220m^2

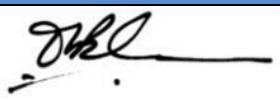
Tower Images

Cunningham Substation Communication Tower Assessment

Quality Information

Document	**INSPECTION REPORT** Cunningham Sub Tower Assessment
Our Reference:	CAP14031
Client's Reference:	Various
Date:	9h May 2017
Prepared for:	Pushkar Chandar Awasthi
Prepared by:	Tim Greenhill (Pacific Corrosion Consultants Ltd) Consultant Mob Ph, (+64) 212929199 email address: timothy.greenhill@pacific-corrosion.com
Reviewed by:	Mike Boardman (Pacific Corrosion Consultants Ltd) Director, mob Ph, (+64) 21906684 email address: mike.boardman@linetech.co.nz

Revision History

Revision	Revision Date	Details	Authorised	
			Name	Signature
1	9/5/2017	FINAL	M A Boardman	

INTRODUCTION

Background

This document consists of the findings of a recently completed condition assessment carried out on the Cunningham Substation Communications Tower. Also included are a series of images to support the findings.

Location

The Communication tower is located in the Cunningham Rd Substation

Inspection Methodology

Utilizing a fall arrest climbing system the Inspectors were able to carry out a visual assessment of the entire structure including the components and attachments.

The inspection consisted of a visual appraisal of the galvanized steel condition using our standard tower condition assessment procedure.

To supplement the visual inspection, a large portfolio of photographs was taken for both reporting and future reference purposes.

CONDITION ASSESSMENT

The Condition assessment was carried out by Tim Greenhill on the 24 of April 2017. The first element to inspect was the structure foundations. It was noted that the horizontal closest to the ground is loose. It is noted that the structure is 18m tall

It was estimated that there were at least 40 M16 bolts that had reached replacement criteria.

During the assessment, 1 member was noted as having reached the point where replacement is required.

Redundant equipment included 1 spare bracket, which we suggest should be removed.

Overall, there was 40 % of the tower surface area that will require secondary preparation, ie abrasive blasting to remove the rust, whist the remaining surfaces will only require pressure washing.

A cold-galv type product has been used on some of the bolts on the structure

Area Data Body

Type	Red Rust	Alloying (Sound but thin Galvanizing)	ZCP (Zinc Corrosion Product)
Main	1/16	0/16	3/16
Minor	10%	0%	45%

Area Data Upper Body

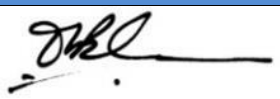
Type	Red Rust	Alloying (Sound but thin Galvanizing)	ZCP (Zinc Corrosion Product)
Main	1/16	0/16	5/16
Minor	15%	0%	55%

Tower Images

Quality Information

Document	**INSPECTION REPORT** Kinoya Tower Assessment
Our Reference:	CAP14031
Client's Reference:	Various
Date:	8h May 2017
Prepared for:	Pushkar Chandar Awasthi
Prepared by:	Tim Greenhill (Pacific Corrosion Consultants Ltd) Consultant Mob Ph, (+64) 212929199 email address: timothy.greenhill@pacific-corrosion.com
Reviewed by:	Mike Boardman (Pacific Corrosion Consultants Ltd) Director, mob Ph, (+64) 21906684 email address: mike.boardman@linetech.co.nz

Revision History

Revision	Revision Date	Details	Authorised	
			Name	Signature
	8-5-2017	FINAL	M A Boardman	

INTRODUCTION

Background

This document consists of the findings of a recently completed condition assessment carried out on the Kinoya Communications Tower. Also included are a series of images to support the findings.

Location

The Communication tower is located in the FEA yard in Kinoya Depot. It is located approximately 15m from the main rd.

Inspection Methodology

Utilizing a fall arrest climbing system the Inspectors were able to carry out a visual assessment of the entire structure including the components and attachments.

The inspection consisted of a visual appraisal of the galvanized steel condition using our standard tower condition assessment procedure.

To supplement the visual inspection, a large portfolio of photographs was taken for both reporting and future reference purposes.

CONDITION ASSESSMENT

The Condition assessment was carried out by Tim Greenhill on the 26 of April 2017. The first element to inspect was the structure foundations.

It was estimated that there were at least 250 M16 bolts that had reached replacement criteria.

The internal climbing ladder was unsafe, requiring approximately 100 m12 bolts replaced to make it safe to use.

During the assessment over 40 members were noted as having reached the point where replacement is required.

It is also noted on the main foundations have an old unknown coating applied, also bolts in various place have a cold galv type of product applied. The platform gratings are lose requiring clamps to secure them. The internal climbing ladder in the upper section needs securing to the structure.

Redundant equipment included a spare microwave dish. Two mounting brackets and a UHF aerial are a redundant suggest removing these.

Overall, there was 60 % of the tower surface area that will require secondary preparation, ie abrasive blasting, to remove the rust, whist the remaining surfaces will only require pressure washing.

Area Data Body

Type	Red Rust	Alloying (Sound but thin Galvanizing)	ZCP (Zinc Corrosion Product)
Main	2/16	4/16	4/16
Minor	10%	20%	30%

Area Data Upper Body

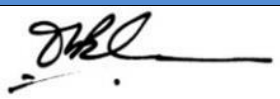
Type	Red Rust	Alloying (Sound but thin Galvanizing)	ZCP (Zinc Corrosion Product)
Main	10/16	1/16	5/16
Minor	50%	5%	10%

Tower Images

Quality Information

Document	**INSPECTION REPORT** Nakobalevu Tower Assessment
Our Reference:	CAP14031
Client's Reference:	Various
Date:	8h May 2017
Prepared for:	Pushkar Chandar Awasthi
Prepared by:	Tim Greenhill (Pacific Corrosion Consultants Ltd) Consultant Mob Ph, (+64) 212929199 email address: timothy.greenhill@pacific-corrosion.com
Reviewed by:	Mike Boardman (Pacific Corrosion Consultants Ltd) Director, mob Ph, (+64) 21906684 email address: mike.boardman@linetech.co.nz

Revision History

Revision	Revision Date	Details	Authorised	
			Name	Signature
		FINAL	M A Boardman	

INTRODUCTION

Background

This document consists of the findings of a recently completed condition assessment carried out on the Nakobalevu Communications Tower. Also included are a series of images to support the findings.

Location

The Communication tower is located on a ridgeline above Suva 8km away from the coast

GPS Co-ordinates

Latitude-18°2'21.03"S

Longitude-178°23'24.48"E

Inspection Methodology

Utilizing a fall arrest climbing system the Inspectors were able to carry out a visual assessment of the entire structure including the components and attachments.

The inspection consisted of a visual appraisal of the galvanized steel condition using our standard tower condition assessment procedure.

To supplement the visual inspection, a large portfolio of photographs was taken for both reporting and future reference purposes.

CONDITION ASSESSMENT

The Condition assessment was carried out by Tim Greenhill and Wilson Nahi on the 22 of April 2017. The first element to inspect was the structure foundations. It was noted that the leg steel at the point of penetration on the climbing ladder into the foundation had corrosion and subsequent metal loss.

The team estimated that there were at least 900 M16 bolts that had reached replacement criteria.

The internal climbing ladder was unsafe, requiring approximately 100 m12 bolts replaced to make it safe to use.

During the assessment over 85 members were noted as having reached the point where replacement is required.

It is also noted on the main foundations have an old unknown coating applied, also bolts in various place have a cold galv type of product applied.

Redundant equipment included three a spare microwave dish bracket, and two old cables which we suggest should be removed.

It is noted that the inspection was not performed on the upper platform at 33m because of the ladder being unsafe to climb due to mounting brackets being corroded to the point of being unsafe.

Overall, there was 90 % of the tower surface area that will require secondary preparation, i.e. abrasive blasting, to remove the rust, whist the remaining surfaces will only require pressure washing.

Area Data Body

Type	Red Rust	Alloying (Sound Galvanizing)	ZCP (Zinc Corrosion Product)
Main	10/16	1/16	4/16
Minor	50%	0%	40%

Area Data Upper Body

Type	Red Rust	Alloying (Sound Galvanizing)	ZCP (Zinc Corrosion Product)
Main	13/16	0/16	2/16
Minor	90%	0%	10%

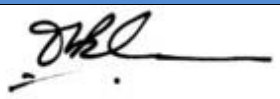
Tower Images

6th June 2017

Quality Information

Document	**INSPECTION REPORT** Kavukavu Tower Assessment
Our Reference:	CAP14031
Client's Reference:	Various
Date:	6th June 2017
Prepared for:	Pushkar Chandar Awasthi
Prepared by:	Tim Greenhill (Pacific Corrosion Consultants Ltd) Consultant Mob Ph, (+64) 212929199 email address: timothy.greenhill@pacific-corrosion.com
Reviewed by:	Mike Boardman (Pacific Corrosion Consultants Ltd) Director, Corrosion Technologist mob Ph, (+64) 21906684 email address: mike.boardman@linetech.co.nz

Revision History

Revision	Revision Date	Details	Authorised	
			Name	Signature
01	10th June 2017	FINAL	M A Boardman	

INTRODUCTION

Background

This document consists of the findings of a recently completed condition assessment carried out on the Kavukavu Communications Tower. Also included are a series of images to support the findings.

Location

The tower is located on top of mount Kavukavu

GPS

17°57’57.84”S

177°17’58.55”E

Inspection Methodology

Utilizing a fall arrest climbing system the inspectors were able to carry out a visual assessment of the entire structure and the components and attachments.

The inspection consisted of a visual appraisal of the galvanized steel condition using an internal version of our company’s tower condition assessment procedure.

To supplement the visual inspection, a large portfolio of photographs was taken for both reporting and reference purposes.

CONDITION ASSESSMENT

A Condition assessment was carried out on the 26th May 2017 by Tim Greenhill and Wilson Nahi. Starting from the ground working their way up the tower, it was noted that the tower is in a good overall condition. The whole structure needs a bolt torqueing as there some loose members. Rust break-out on bolts and nuts was noted. Two missing M16 bolts on 2nd level platform, and one bracket holding a UHF aerial meets replacement criteria. ZCP is starting to form on some of the edges of the steel members. Minor members higher up the structure have rust break-out forming.

Redundant Communications Gear.

There are three microwave dishes that are redundant and could be removed.

Area Data Body

Type	Red Rust	Alloying (Sound Galvanizing)	ZCP (Zinc Corrosion Product)
Main	1/16	0/16	2/16
Minor	3%	2%	12%

1. Recommendations

The tower is currently in good condition. There are a number of indicators that the onset of degradation is not far away. Given that there is very little in the way of secondary preparation we would recommend that the tower be given a pressure wash, the localised areas of rust (approx. 10-12m^2) be wet abrasive blasted and a suitable protective coating applied. The first coat over the blasted areas and a second coat over the entire structure. Consideration could be given to trialling of one of the water borne zinc rich paints[1] that are currently being offered by a number of manufacturers.

Where scaffold sections have been used to secure componentry, the poles and brackets should be treated as per the tower structure, with the threaded sections treated with a petrolatum tape at the end of the works. If the equipment could be incorporated directly onto the tower structure, this would negate the use of the scaffold structures. Care should also be taken to temporarily displace the wave guide/cables away from the structure during preparation and painting activities.

[1] ZRC zero VOC zinc compound

Tower Images

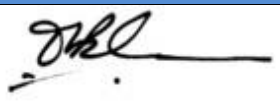
Lololo Communication Tower Assessment

6th June 2017

Quality Information

Document	**INSPECTION REPORT** Lololo Tower Assessment
Our Reference:	CAP14031
Client's Reference:	Various
Date:	6th June 2017
Prepared for:	Pushkar Chandar Awasthi
Prepared by:	Tim Greenhill (Pacific Corrosion Consultants Ltd) Consultant Mob Ph, (+64) 212929199 email address: timothy.greenhill@pacific-corrosion.com
Reviewed by:	Mike Boardman (Pacific Corrosion Consultants Ltd) Director, Corrosion Technologist mob Ph, (+64) 21906684 email address: mike.boardman@linetech.co.nz

Revision History

Revision	Revision Date	Details	Authorised	
			Name	Signature
		FINAL	M A Boardman	

INTRODUCTION

Background

This document consists of the findings of a recently completed condition assessment carried out on the Lololo Communications Tower. Also included are a series of images to support the findings.

Location

The tower is located up a long steep track just out of Lautoka

GPS

17°33’52.94”S

177°36’47.06”E

Inspection Methodology

Utilizing a fall arrest climbing system the inspectors were able to carry out a visual assessment of the entire structure and the components and attachments.

The inspection consisted of a visual appraisal of the galvanized steel condition using an internal version of our company’s tower condition assessment procedure.

To supplement the visual inspection, a large portfolio of photographs was taken for both reporting and reference purposes.

CONDITION ASSESSMENT

Tim Greenhill and Wilson Nahi performed a condition assessment on the Navutu tower on the 27th May 2017. The tower is in a good overall condition with sound galvanising The whole structure needs bolt re-torqueing as there a number of loose members. The is rust break out on bolts and nuts and minor alloying on some of the lower members.

Redundant Communications Gear.

There are three microwave dishes that are currently redundant and if they are not going to be recommissioned, should be removed, along with their scaffold support brackets.

Area Data Body

Type	Red Rust	Alloying (Sound Galvanizing)	ZCP (Zinc Corrosion Product)
Main	0/16	0/16	0/16
Minor	31%	2%	2%

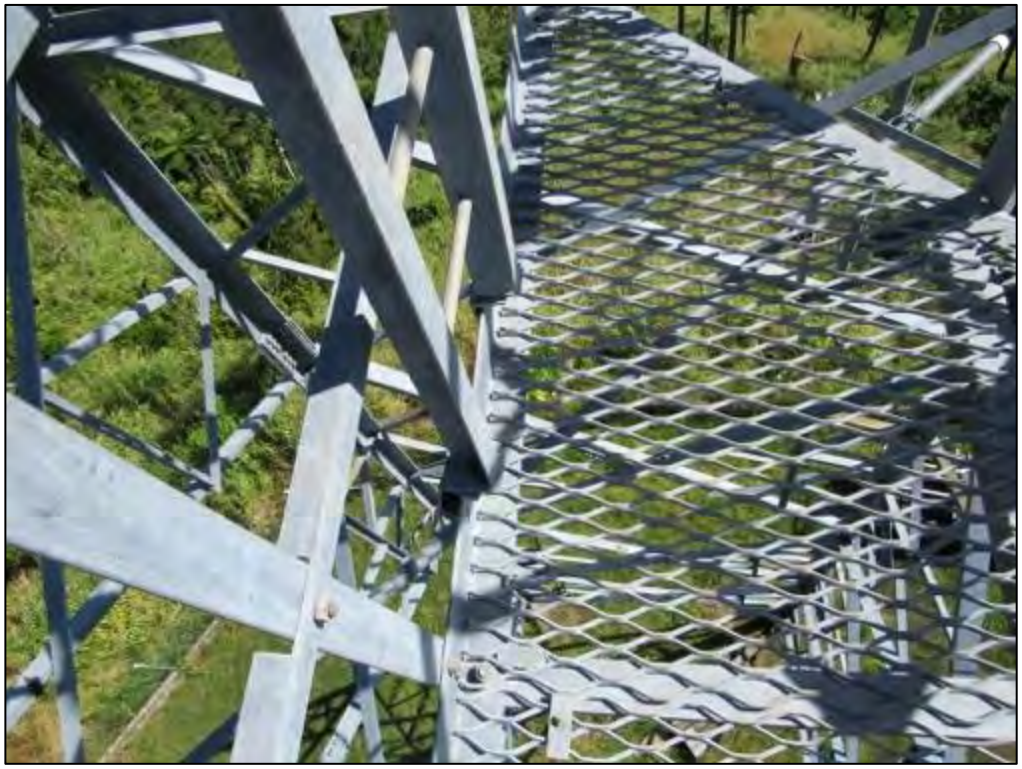
Upper Body

Type	Red Rust	Alloying (Sound Galvanizing)	ZCP (Zinc Corrosion Product)
Main	0/16	0/16	0/16
Minor	2%	5%	2%

Recommendations

It is suggested that apart from some minor bolt replacement, re-torqueing of the tower and a review on attached equipment, the tower does not require painting in the near future.

Tower Images

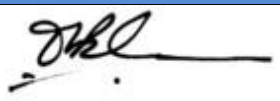


6th June 2017

Quality Information

Document	**INSPECTION REPORT** Navutu Tower Assessment
Our Reference:	CAP14031
Client's Reference:	Various
Date:	6th June 2017
Prepared for:	Pushkar Chandar Awasthi
Prepared by:	Tim Greenhill (Pacific Corrosion Consultants Ltd) Consultant Mob Ph, (+64) 212929199 email address: timothy.greenhill@pacific-corrosion.com
Reviewed by:	Mike Boardman (Pacific Corrosion Consultants Ltd) Director, Corrosion Technologist mob Ph, (+64) 21906684 email address: mike.boardman@linetech.co.nz

Revision History

Revision	Revision Date	Details	Authorised	
			Name	Signature
		FINAL	M A Boardman	

INTRODUCTION

Background

This document consists of the findings of a recently completed condition assessment carried out on the Navutu Communications Tower. Also included are a series of images to support the findings.

Location

The tower is located in the Latoka FEA yard

Inspection Methodology

Utilizing a fall arrest climbing system the inspectors were able to carry out a visual assessment of the entire structure and the components and attachments.

The inspection consisted of a visual appraisal of the galvanized steel condition using an internal version of our company's tower condition assessment procedure.

To supplement the visual inspection, a large portfolio of photographs was taken for both reporting and reference purposes.

CONDITION ASSESSMENT

Wilson and I performed a Condition assessment starting from the ground working our way up the tower. The tower has is in the yard in Latoka and is used only to test gear.The tower has minor rust breaking out on some of the bolts and nuts.Some of the ladder bracket bolts require torqueing as they are loose. 6 brackets holding the UHF aerials need R/C.The top platform of the structure meets R/C criteria it looks added on the structure at some time as it is coated .The tower is in a sound condition with very minor ZCP and a minor amount of rust on it.

Redundant Communications Gear.

There is 1 microwave dish that is redundant and can be removed.

Area Data Body

Type	Red Rust	Alloying (Sound Galvanizing)	ZCP (Zinc Corrosion Product)
Main	0/16	0/16	0/16
Minor	1%	2%	2%

Area Data Upper Body

Type	Red Rust	Alloying (Sound Galvanizing)	ZCP (Zinc Corrosion Product)
Main	0/16	0/16	1/16
Minor	1%	4%	5%

Tower Images

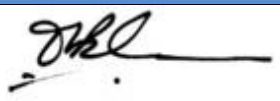
Vuda Communication Tower Assessment

6th June 2017

Quality Information

Document	**INSPECTION REPORT** Vuda Tower Assessment
Our Reference:	CAP14031
Client's Reference:	Various
Date:	6th June 2017
Prepared for:	Pushkar Chandar Awasthi
Prepared by:	Tim Greenhill (Pacific Corrosion Consultants Ltd) Consultant Mob Ph, (+64) 212929199 email address: timothy.greenhill@pacific-corrosion.com
Reviewed by:	Mike Boardman (Pacific Corrosion Consultants Ltd) Director, Corrosion Technologist mob Ph, (+64) 21906684 email address: mike.boardman@linetech.co.nz

Revision History

Revision	Revision Date	Details	Authorised	
			Name	Signature
		FINAL	M A Boardman	

INTRODUCTION

Background

This document consists of the findings of a recently completed condition assessment carried out on the Vuda Communications Tower. Also included are a series of images to support the findings.

Location

The tower is located near the Vuda power station close to Latoka area.

The GPS Co-ordinates are

17°40’30.73”S

177°26’01.95E

Inspection Methodology

Utilizing a fall arrest climbing system the inspectors were able to carry out a visual assessment of the entire structure and the components and attachments.

The inspection consisted of a visual appraisal of the galvanized steel condition using an internal version of our company’s tower condition assessment procedure.

To supplement the visual inspection, a large portfolio of photographs was taken for both reporting and reference purposes.

CONDITION ASSESSMENT

Wilson and I performed a Condition assessment starting from the ground working our way up the tower. The tower has two ground cables on the legs that visually look intact. The tower is in good condition with some minor rust break out on some nuts and bolts. The 1st platform ladder bracket is lose and needs securing. A small amount of members on the top channel are starting to alloy in the upper body. The structure would require a water blast and hand prep spec could return good results.

Redundant Communications Gear.

There are 3 microwave dishes that are redundant and can be removed.

Area Data Body

Type	Red Rust	Alloying (Sound Galvanizing)	ZCP (Zinc Corrosion Product)
Main	0/16	0/16	1/16
Minor	1%	10%	3%

Area Data Upper Body

Type	Red Rust	Alloying (Sound Galvanizing)	ZCP (Zinc Corrosion Product)
Main	0/16	0/16	2/16
Minor	1%	1%	2%

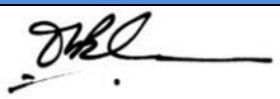
Tower Images

Taladrau Communication Tower Assessment

Quality Information

Document	**INSPECTION REPORT** Taladrau Tower Assessment
Our Reference:	CAP14031
Client's Reference:	Various
Date:	4h May 2017
Prepared for:	Pushkar Chandar Awasthi
Prepared by:	Tim Greenhill (Pacific Corrosion Consultants Ltd) Consultant Mob Ph, (+64) 212929199 email address: timothy.greenhill@pacific-corrosion.com
Reviewed by:	Mike Boardman (Pacific Corrosion Consultants Ltd) Director, mob Ph, (+64) 21906684 email address: mike.boardman@linetech.co.nz

Revision History

Revision	Revision Date	Details	Authorised	
			Name	Signature
REV01	8.5.2017	FINAL	M A Boardman	

INTRODUCTION

Background

This document consists of the findings of a recently completed condition assessment carried out on the Taladrau Communications Tower. Also included are a series of images to support the findings.

Location

The Communication tower is in the Taladrau area close to the Monasavu Dam.

GPS Co-ordinates -17°45'10.51" S 178°04'21.81" E

Inspection Methodology

Utilizing a fall arrest climbing system the Inspectors were able to carry out a visual assessment of the entire structure including the components and attachments.

The inspection consisted of a visual appraisal of the galvanized steel condition using our standard tower condition assessment procedure.

To supplement the visual inspection, a large portfolio of photographs was taken for both reporting and future reference purposes.

CONDITION ASSESSMENT

The Condition assessment was carried out by Tim Greenhill and Wilson Nahi on the 02 May 2017. The first element to inspect was the structure foundations. It was noted that the leg steel at the point of penetration into the foundation had corrosion and subsequent metal loss.

The team estimated that there were at least 800 M16 bolts that had reached replacement criteria.

The internal climbing ladder was unsafe, requiring approximately 100 m12 bolts replaced to make it safe to use.

During the assessment over 80 members were noted as having reached the point where replacement is required.

There are three microwave dishes that are not connected and were assumed to be redundant. Other redundant equipment included a spare microwave dish bracket, which we suggest should be removed.

Overall, there was 97 % of the tower surface area that will require secondary preparation, i.e. abrasive blasting, to remove the rust, whist the remaining surfaces will only require pressure washing.

Area Data Body

Type	**Red Rust**	**Alloying** (Low thickness Galvanizing)	**ZCP** **(Zinc Corrosion Product)**
Main	12/16	0/16	4/16
Minor	55%	0%	40%

Area Data Upper Body

Type	**Red Rust**	**Alloying** (Low Thickness Galvanizing)	**ZCP** **(Zinc Corrosion Product)**
Main	13/16	0/16	2/16
Minor	90%	0%	10%

Tower Images


GR4

Wailoa Communication Tower Assessment

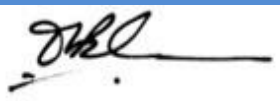
Wailoa Communication Tower Assessment

28 July 2017

Quality Information

Document	**INSPECTION REPORT** Wailoa Tower Assessment
Our Reference:	CAP14031
Client's Reference:	Various
Date:	3rd July 2017
Prepared for:	Pushkar Chandar Awasthi
Prepared by:	Tim Greenhill (Pacific Corrosion Consultants Ltd) Consultant Mob Ph, (+64) 212929199 email address: timothy.greenhill@pacific-corrosion.com
Reviewed by:	Mike Boardman (Pacific Corrosion Consultants Ltd) Director, Corrosion Technologist mob Ph, (+64) 21906684 email address: mike.boardman@linetech.co.nz

Revision History

Revision	Revision Date	Details	Authorised	
			Name	Signature
		FINAL	M A Boardman	

INTRODUCTION

Background

This document consists of the findings of a recently completed condition assessment carried out on the Wailoa Communications Tower. Also included are a series of images to support the findings.

Location

The tower is located in the Wailoa Substation

GPS

17°44’26.83”S

178°6’8.67”E

Inspection Methodology

Utilizing a fall arrest climbing system the inspectors were able to carry out a visual assessment of the entire structure and the components and attachments.

The inspection consisted of a visual appraisal of the galvanized steel condition using an internal version of our company's tower condition assessment procedure.

To supplement the visual inspection, a large portfolio of photographs was taken for both reporting and reference purposes.

CONDITION ASSESSMENT

Tim Greenhill and Wilson Nahi performed a condition assessment on the Wailoa tower on the 25th June 2017.

Redundant Communications Gear.

There are 3 redundant Microwave dishes and brackets attached to the structure that can be removed.

Area Data Body

Type	Red Rust	Alloying (Sound Galvanizing)	ZCP (Zinc Corrosion Product)
Main	0/16	0/16	0.5/16
Minor	0%	0%	5%

Upper Body

Type	Red Rust	Alloying (Sound Galvanizing)	ZCP (Zinc Corrosion Product)
Main	0/16	0/16	1/16
Minor	0%	0%	10%

Notes

Some lower diagonal members are loose. Heavy moss and mould on structure

Recommendations

The tower is in sound condition. It is recommended the redundant gear be removed and the whole structure bolts re-torqued. The structure could be water washed light hand prep then coated to prevent corrosion

Tower Images