



SiteSee Pty Ltd

**SITE INFORMATION:**

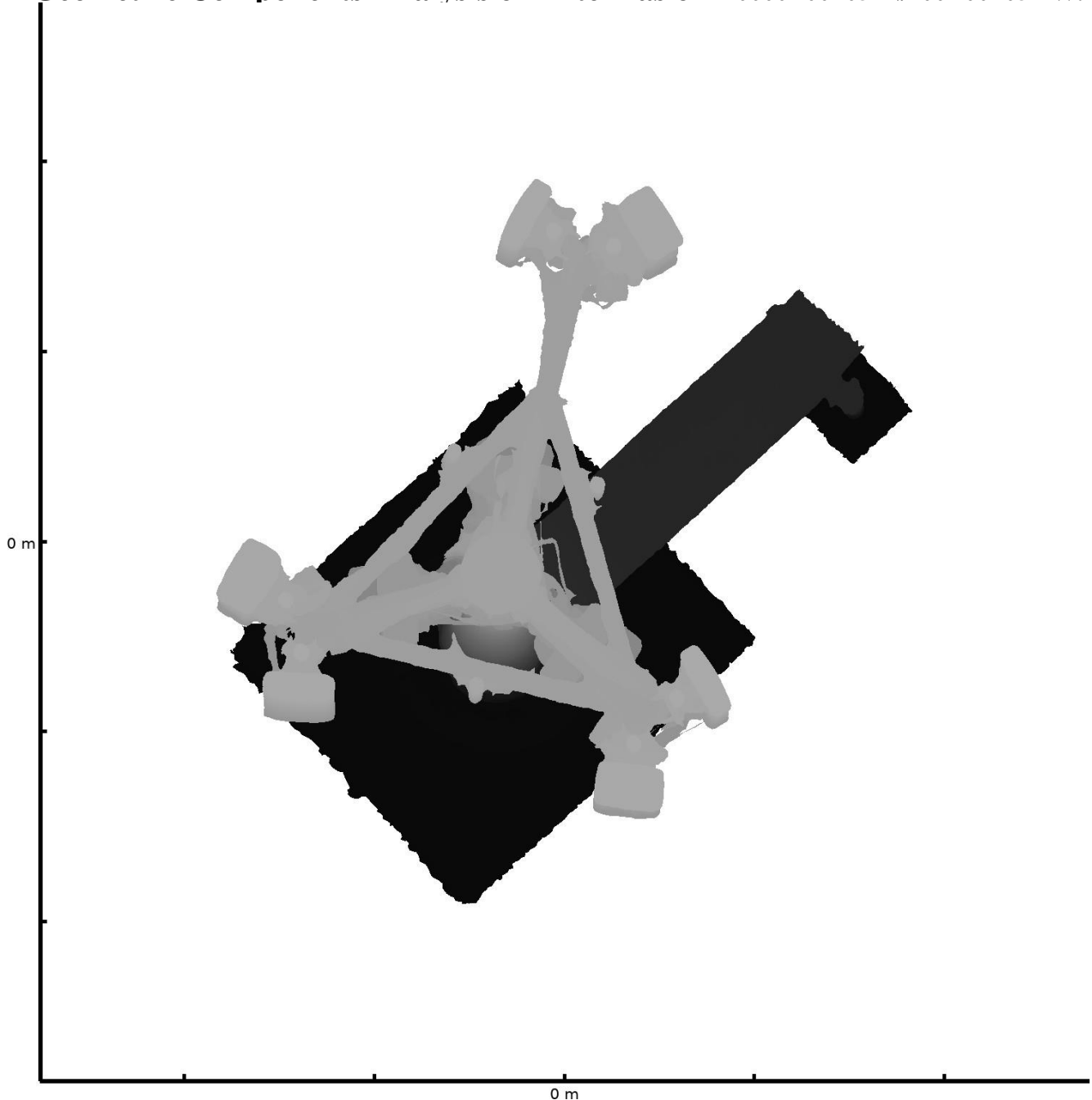
<b>Coordinates:</b>	Latitude:	~ 00° 00' 05" North
	Longitude:	~ 00° 00' 05" West
<b>Structure:</b>	Height:	20m

**INSPECTION DETAILS:**

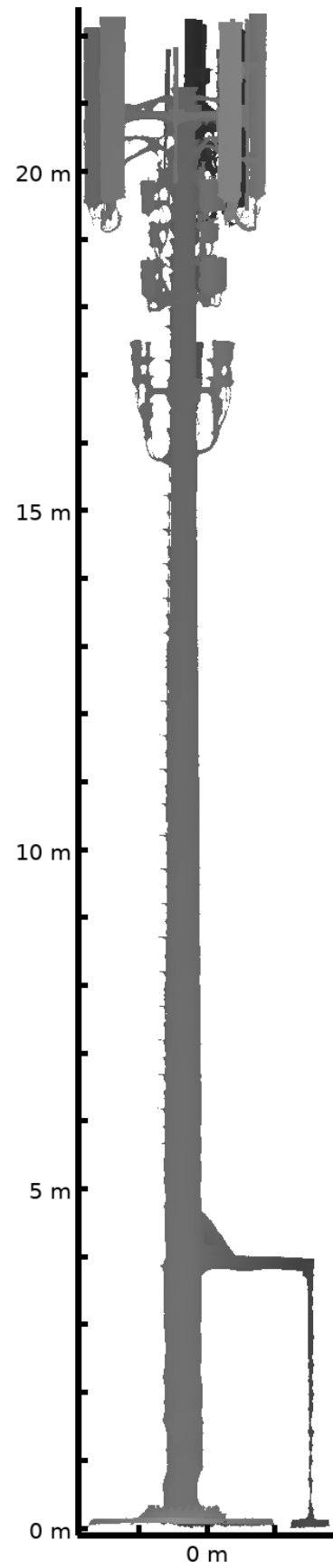
<b>Inspected by:</b>	Adebamowo Adenowo
	Banjo Olufemi

<b>Date of Inspection:</b>	19-January-2020
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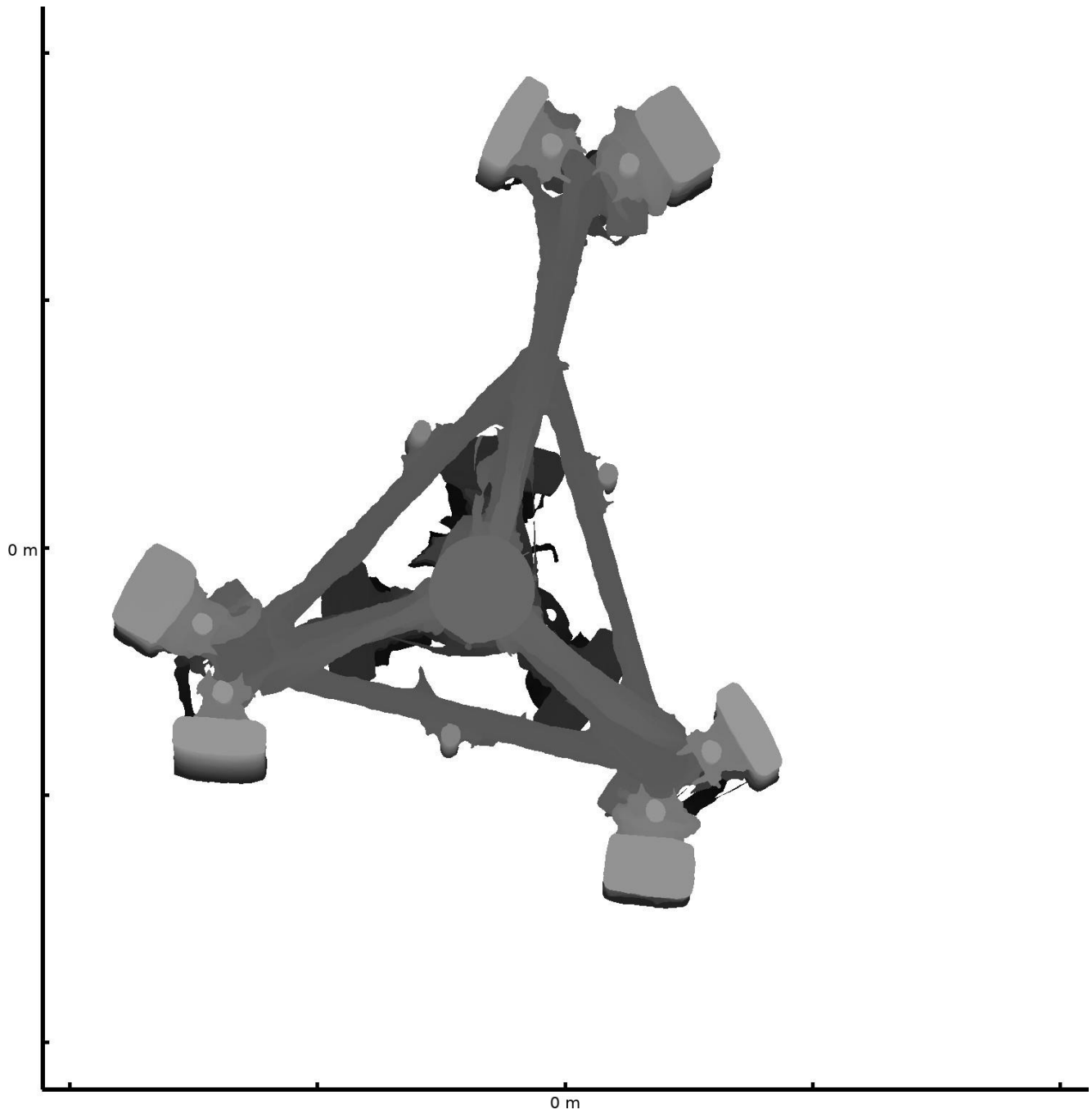
**Geometric Components Analysis of Antennas on ~0000° 00' 05"N/~ 00° 00' 05" W.**



**Figure 1: Tower from a perspective directly above the tower.**



**Figure 2: Tower from a perspective to the south of the tower.**



**Figure 3: Horizontal slice of tower at height 151.586 m.**

Owner	Owner ID	Model Number	Model Number RFNSA	Height (m)	Height RFNSA (m)	Height diff (m)	Bearing (°)	Bearing RFNSA (°)	Bearing diff (°)	Tilt (°)	Tilt RFNSA (°)	Tilt diff (°)
Osacomms	A1	CNPX310R4P	CNPX310R-4P	20.96	20.0	<u>0.96</u>	185	180	<u>5</u>	2.4	0.0	<u>2.4</u>
Osacomms	A9	CNPX310R4P	CNPX310R-4P	21.0	20.0	<u>1.0</u>	61	60	<u>1</u>	-0.9	0.0	<u>0.9</u>
Osacomms	A17	CNPX310R4P	CNPX310R-4P	20.91	20.0	<u>0.91</u>	300	300	<u>0</u>	-0.6	0.0	<u>0.6</u>
Osacomms	A7	RVVPX310B2	RVVPX310B2	20.92	20.0	<u>0.92</u>	187	180	<u>7</u>	0.9	0.0	<u>0.9</u>
Osacomms	A15	RVVPX310B2	RVVPX310B2	20.82	20.0	<u>0.82</u>	59	60	<u>1</u>	-1.9	0.0	<u>1.9</u>
Osacomms	A23	RVVPX310B2	RVVPX310B2	20.84	20.0	<u>0.84</u>	301	300	<u>1</u>	-0.9	0.0	<u>0.9</u>

Table 1: List of antennas and their specifications on the site.  
 'RFNSA' denotes RFNSA-reported values, and 'diff' denotes the difference between actual and RFNSA-reported values

## Indicative Electromagnetic Energy Report for OSACOMMS

### 1. Introduction and Background

This report details the Radiation Hazard Exclusion Zones for the site listed above. Do not access the areas defined by these zones. The zones follow the levels defined in the International Commission on Non-Ionizing Radiation Protection (ICNIRP) – limits established in 1998.

### 2. Purpose

Radiation Hazard Exclusion Zones are reported to allow management of the site to know if radiation is within safe levels for personnel, nature and other susceptible objects near the site.

### 3. Audience

This report is intended for maintainers of the site, and personnel associated with these maintainers. The client for whom the report was generated for is FRM Communications Ltd.

### 4. Assessor

Airmap and SiteSee Pty Ltd performed the EME assessment on the site.

### 5. Software

The software used to generate the exclusion zones is proprietary to SiteSee, and is named the RadHaz Isosurface Generator (v0.1).

### 6. Assessment Methods

We take the  $\theta = 90$  deg and  $\phi = 0$  deg far-field antenna patterns defined in a national pattern database, and apply a procedure to produce a 3D pattern defined over all directions. For all antennas on the tower, the intensity is calculated using these 3D patterns using an inverse-r-squared relationship (making a far-field assumption). We produce the surface of points at which the intensity is at its threshold, following RPS3, and construct a 3D object for visualisation.

### Assumptions and Uncertainty

Due to the nature of a far-field approximation, the estimated intensity is larger than in reality, and thus we are confident that we are over-estimating the size of the exclusion zone.

In addition, the construction of the 3D object seems to include areas outside of the surface of points, further increasing our confidence of the inclusion of the physical exclusion zone.

### 7. Exclusion Zones

Two exclusion zones are displayed in the figures below. The inner, red occupational zone must not be accessed by anyone at any time. The outer, orange general public zone must only be accessed by specially trained personnel.

Figure 1: Tower and exclusion zones from a perspective directly above the tower. The red is the occupational zone, and the orange is the general public zone.

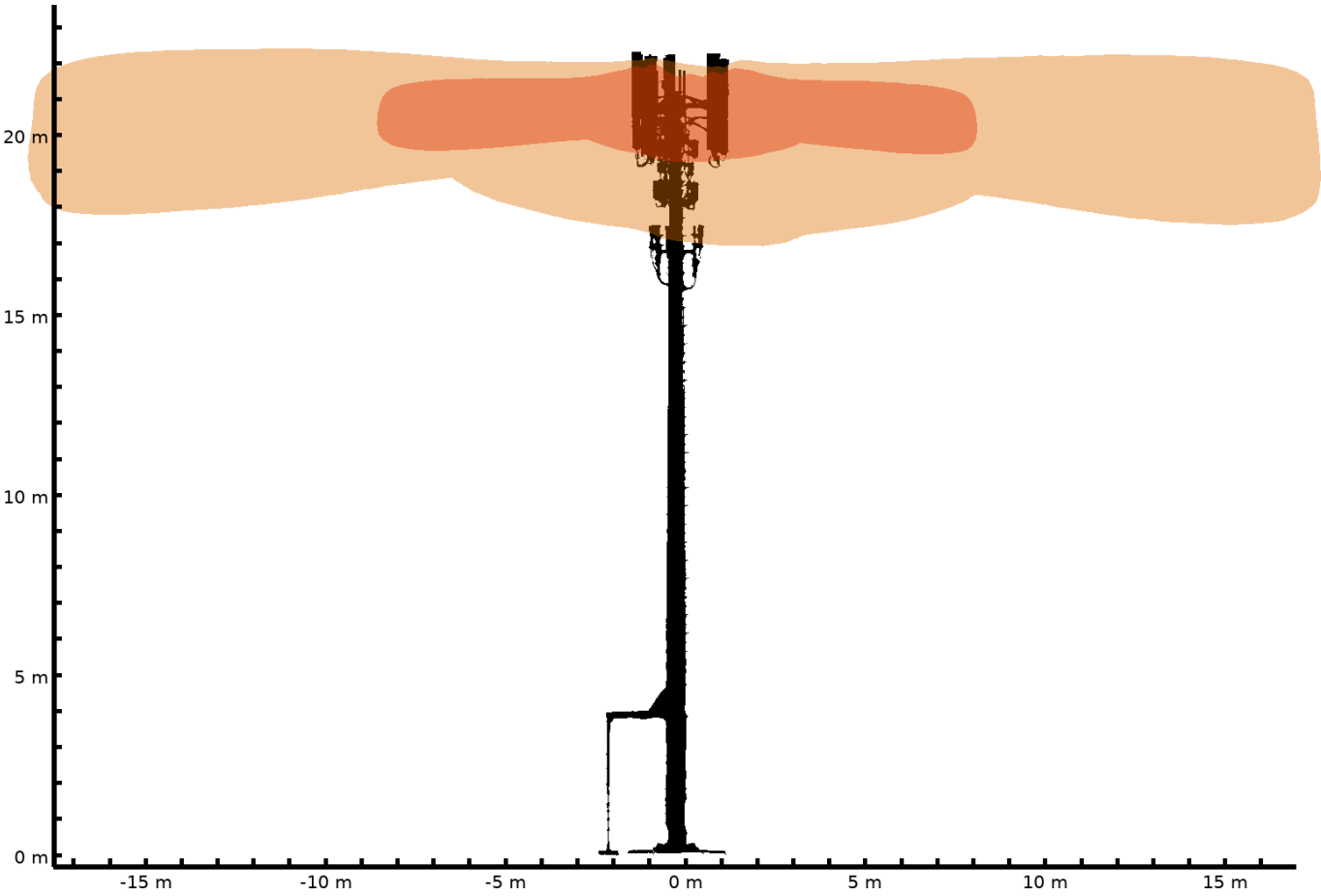


Figure 2: Tower and exclusion zones from a perspective to the side of the tower. The red is the occupational zone, and the orange is the general public zone.

## 8. Antenna Specifications

These exclusion zones are generated with the site information in table 1.

Owner	Owner ID	Manufacturer	Model Number	Height (m)	Length (m)	Bearing (°)	Tilt (°)	Port	Electrical tilt (°)	Power (W)	Frequency (MHz)
Osacomms	A1	NCC TECHNOLOGIES	CNPX310R4P	20.96	2.7	185	2.4	1	0-10	32	892
								2	0-10	32	892
								3	0-10	50	2110
								4	0-10	50	2110
Osacomms	A9	NCC TECHNOLOGIES	CNPX310R4P	21.0	2.7	61	-0.9	1	0-10	32	892
								2	0-10	32	892
								3	0-10	50	2110
								4	0-10	50	2110
Osacomms	A17	NCC TECHNOLOGIES	CNPX310R4P	20.91	2.7	300	-0.6	1	0-10	32	892
								2	0-10	32	892
								3	0-10	50	2110
								4	0-10	50	2110
Osacomms	A7	NCC TECHNOLOGIES	RVVPX310B2	20.92	2.7	187	0.9	1	0-10	25	880
								2	0-10	25	880
								1	0-10	50	747
								2	0-10	50	747
								3	0-10	80	1805
								4	0-10	80	1805
Osacomms	A15	NCC TECHNOLOGIES	RVVPX310B2	20.82	2.7	59	-1.9	5	0-10	80	1805
								6	0-10	80	1805
								1	0-10	25	880
								2	0-10	25	880
								1	0-10	50	747
								2	0-10	50	747
Osacomms	A23	NCC TECHNOLOGIES	RVVPX310B2	20.84	2.7	301	-0.9	3	0-10	80	1805
								4	0-10	80	1805
								5	0-10	80	1805
								6	0-10	80	1805
								1	0-10	25	880
								2	0-10	25	880

Table 1: List of antennas and their specifications on the site.

## Corrosion Report for OSACOMMS

### 1 Rust Risk Factor Definition

This report presents what SiteSee's algorithms have identified as rust according to the parameters set. These parameters are set on the side of caution with an aim to detect all major rust, and as a result the report may include false positives of rust items. It is not a listing of manually identified items of rust, and therefore may include false positives or exclude false negatives of rust items. This report does not replace a formal rust report performed by skilled personnel.

The risk metric is used to quantify the risk posed by each detected rust spot. The metric is classed into the three categories defined below; high, moderate and low. The metric is calculated based on the volume and the degree of degradation of the spot. The metric is defined in the following table (Table 1):

Risk Class	Risk Metric Range	Colour Code
High risk	8-10	Red
Moderate risk	4-7	Yellow
Low risk	1-3	Green

## 2 Detected Rust Locations

The following table (Table 2) consists of potential rust locations on the tower structure. The precise locations, detected rust spot size, degree of degradation and risk factor are included.

Rust ID	Location	Max dimension (mm)	Degradation (0-5)	Risk factor (0-10)
8	0.87, 1.58, 147.66	45.0	tba	10
1	1.27, 0.85, 149.4	20.0	tba	7
0	-0.17, 0.85, 151.58	31.0	tba	4
5	0.73, 0.52, 135.95	10.0	tba	3
6	0.28, 0.87, 147.67	25.0	tba	3
9	-0.09, 0.89, 151.59	14.0	tba	2
15	0.96, 2.88, 152.21	13.0	tba	1
22	0.73, 1.6, 147.61	8.0	tba	1
16	0.65, 0.82, 147.61	1.0	tba	1
18	0.8, 1.58, 147.55	8.0	tba	1
7	1.2, 0.6, 147.67	19.0	tba	1
10	1.48, 0.16, 152.92	9.0	tba	1
3	0.14, 1.01, 147.69	7.0	tba	1
14	0.73, 1.59, 147.65	14.0	tba	1
17	1.29, 0.92, 149.36	18.0	tba	1
2	0.87, 0.69, 141.32	2.0	tba	1
11	0.84, 1.59, 147.92	8.0	tba	1
21	-0.12, 0.78, 151.62	19.0	tba	1
20	1.23, 0.91, 149.33	19.0	tba	1
12	0.53, 0.72, 140.2	12.0	tba	1
19	0.77, 1.6, 147.56	20.0	tba	1
13	-0.1, 0.87, 151.57	11.0	tba	1
4	0.65, 0.52, 136.31	9.0	tba	1



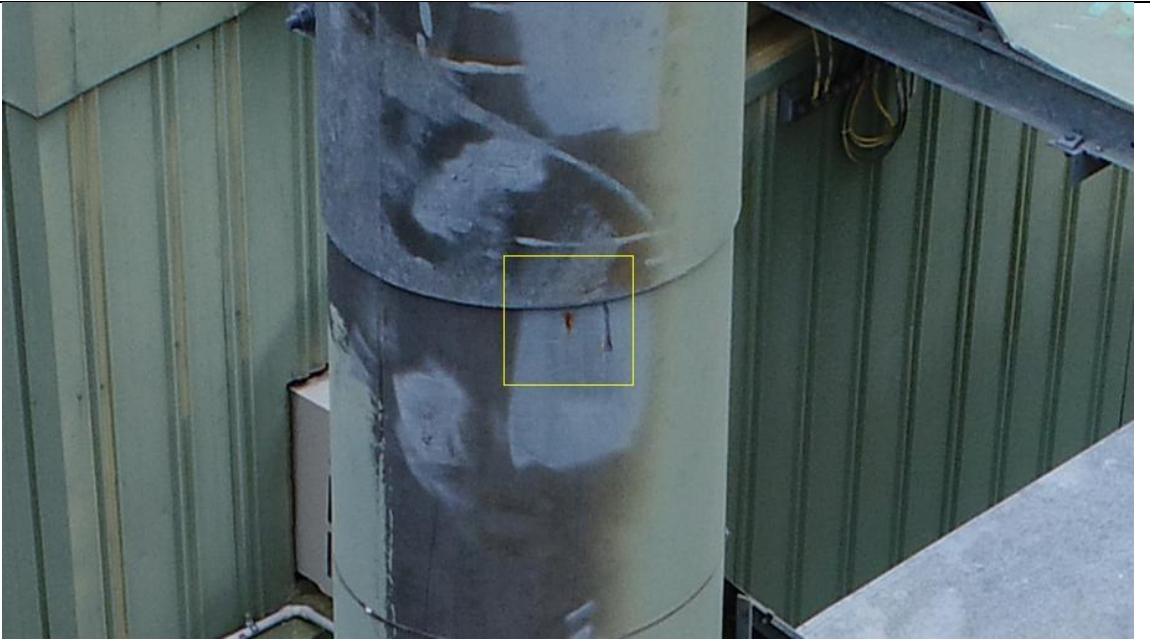
Table 2: Summary of corrosion sites

## 3. Detected Rust Visualizations

The following table (Table 3) highlights the location of each rust spot detected. The rust content detected has been highlighted using a red circle for visual aid.

Rust ID	2D image
8	



1	 <p>A close-up photograph of a white, rectangular electronic device mounted on a metal tower. The device has a series of ventilation slots on its side. A yellow rectangular box highlights a small, dark component on the top surface of the device. Black cables are visible running along the tower structure.</p>
0	 <p>A close-up photograph showing the cable management area of a tower. Multiple black cables are bundled together and connected to a white terminal block. A yellow rectangular box highlights a specific connection point where a cable is plugged into the terminal block. A circular metal plate is visible in the foreground.</p>
5	 <p>A close-up photograph of a section of a metal tower. The tower has a corrugated metal surface. A yellow rectangular box highlights a small, dark mark or component on the tower's surface. The background shows a green corrugated metal wall.</p>



6



9



15

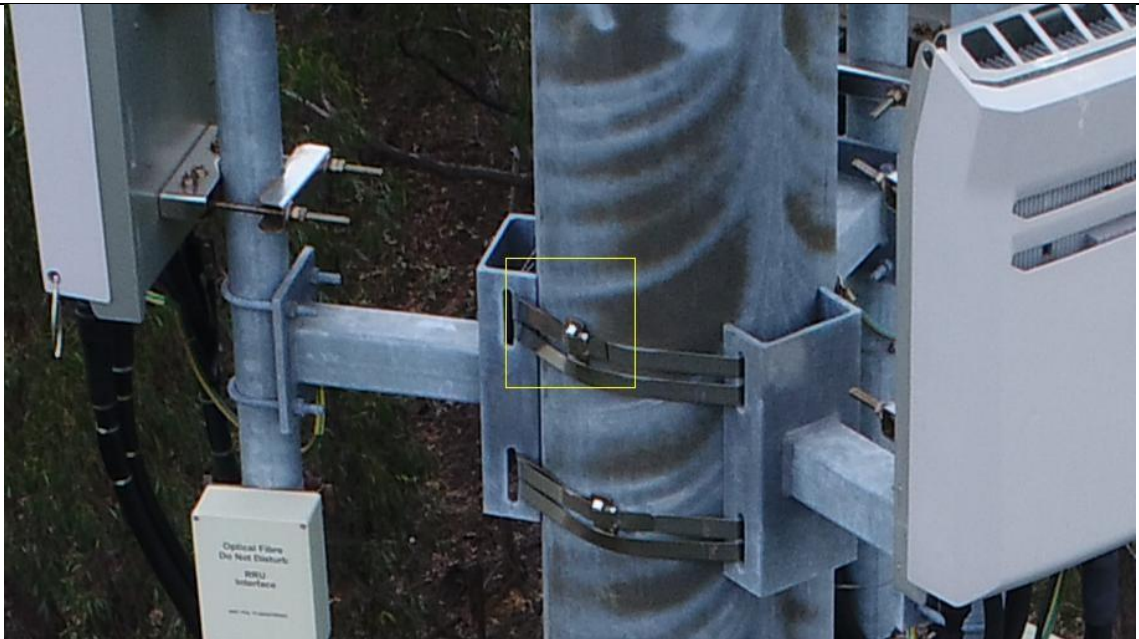




22






16



18





7	 <p>A close-up photograph of a metal pole. A yellow rectangular box highlights a bracket on the pole that holds a vertical pipe. To the right, a white electronic device is mounted on the pole. The background shows some greenery and a paved area.</p>
10	 <p>A close-up photograph of a metal pole. A yellow rectangular box highlights a vertical pipe. To the left, a white electronic device is mounted on the pole. The background shows some greenery.</p>
3	 <p>A close-up photograph of a metal pole. A yellow rectangular box highlights a bracket on the pole that holds a vertical pipe. To the right, a white electronic device is mounted on the pole. The background shows some greenery and a paved area.</p>



14	 <p>A close-up photograph of a grey metal structure, likely part of a telecommunications tower or antenna array. A white label is attached to the structure, and a yellow box highlights a specific connection point or component.</p>
17	 <p>A photograph showing a grey metal structure with various cables and components. A yellow box highlights a specific component, possibly a connector or a small electronic device, located near the base of the structure.</p>
2	 <p>A photograph of a grey metal structure, possibly a tower or antenna, with a yellow box highlighting a horizontal band or section. The structure is situated outdoors, with trees and a wooden platform visible in the background.</p>



11	
21	
20	



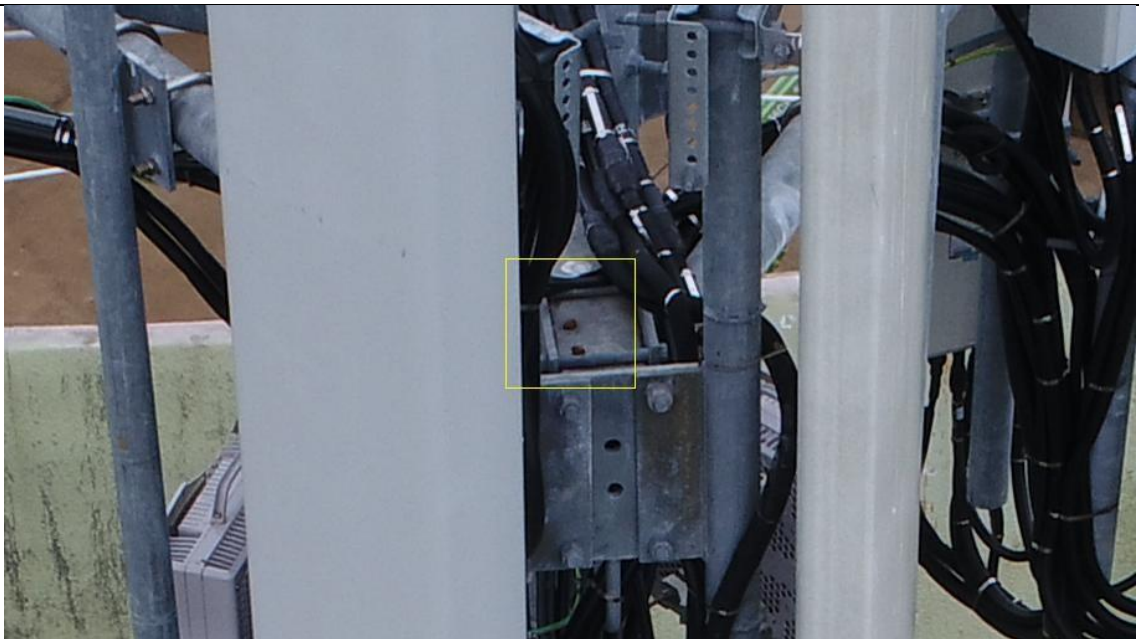
12



19



13



4



Table 3: Photos of corrosion sites