**NETWORK RECOVERY PLAN**

**CELL ON WHEELS**

GENERAL REQUIREMENTS

Rollout Department

Sites Build/Civil Works

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# SUMMARY

The purpose of this document is to provide general requirements for the requested MIC1 Cell on Wheels (CoWs).

# REQUIREMENTS

## GENERAL

These requirements act as a guideline and bidder is free to propose the solution that he deems to be compliant with MIC1 needs and scope.

However, the CoW shall consist of one (1) trailer, hosting all telco/electrical equipment and mast/tower, a power generating set (optional) and all the needed parts and components to ensure proper transportation, erection, leveling of the tower and proper functioning of the CoW.

## TOWER

The tower shall be lattice telescopic, hydraulically or electrically driven with DC pump, dimensioned for the below loads:

### Tower Load:

* 3x sectors radio antennas on top, each of 245cm tall, 38cm wide, 17cm depth and 42kg of weight.
* 2x mini-link MW transmission antenna at 15m high and on top, diameter 60cm + radio unit, weight around 20kg each.
* Wind loads of a wind speed of 120km/h. Consider an exposed site (top of mountain).
* These radio antennas shall be fitted on mast/pole of 3m high and 4” diameter on top of the tower, when it is in nested/horizontal state, before erection.

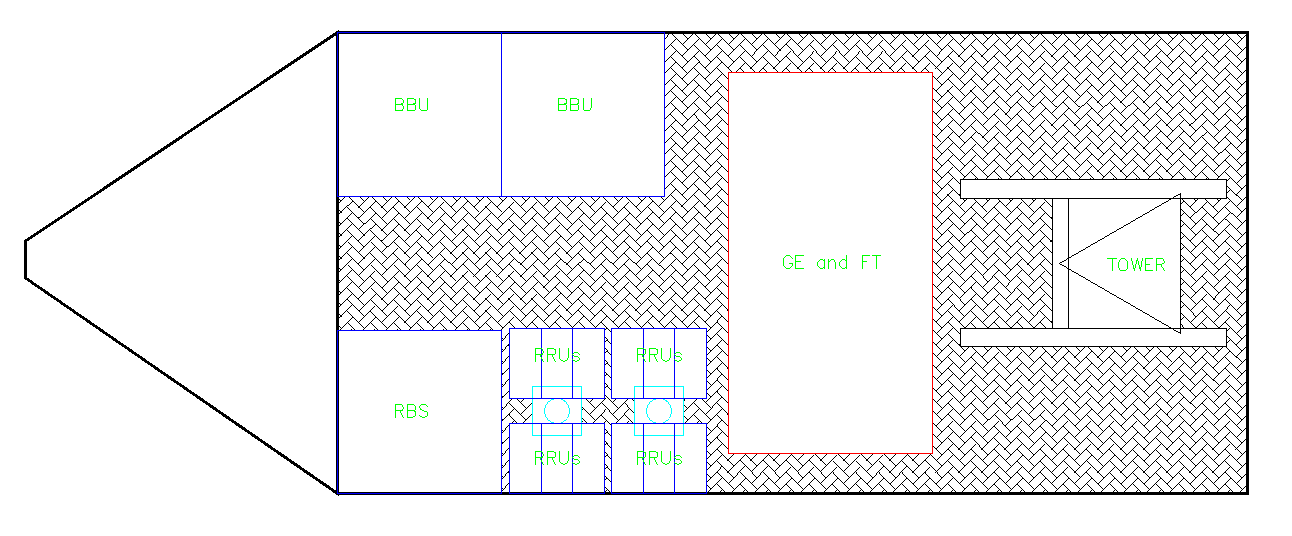
### The Tower:

* shall be mounted on the trailer system (integrated) to allow mast rotation to vertical lockable position.
* can be fitted with guys/cables below antennas level. The guys should be optimized to be fitted in a minimum installation area and should be galvanized and designed at 1.5 safety factor.
* sections shall be made of hot-dipped galvanized HDG members of no less than 90microns.
* shall be fitted with electric winches for tilting and erection with a control panel. Winches shall have a lifting capacity double the capacity needed for lifting the tower.
* lifting cables shall be galvanized and designed at 1.5 safety factor.
* should be equipped with an aviation beacon lamp.
* Galvanization warranty shall be given for a period of 10 years.

## TRAILER

The trailer size is very important. It should be big enough to allow adequate access to all equipment (opening doors of telco equipment for example) while also being as compact as possible:

* Floor cover/deck should be designed with HDG under structure to withstand the weights and equipment fixation. Equipment swaying is not allowed.
* Trailer should have good ground clearance to ensure its safety during transportation/towing and in rough land and routes.
* Pulled/towed by a 4x4 SUV or a small truck. Eye ball towing part shall be provided.
* Trailor width should be designed to ensure its flexible for transportation inside GBA (narrow path).
* Maximum height of any member of the CoW in transportation mode (max 400cm from ground level), while ensuring that no swaying will endanger the trailer during towing or when transported on a truck. By the same, the trailer height should abide by the Lebanese Traffic Laws.
* Easy and fast deployment: Manual levers/jacks for level adjustment.
* All-wheel assisted braking system (hydraulic or electric).
* Braking and rear LED lights that can be connected to the transporting vehicle.
* Physical protection should be ensured. A 220cm high gated fence, made up of hot dipped galvanized steel HDG, all around the trailer should be provided.
* A spare tire should be provided.
* A storage box for tools, tackles, climbing gears etc.
* A drum for 7/8” RF cables.
* Counterweights could be adopted.
* The overall footprint of the CoW when fully deployed should be minimal so it can fit in any location. The smaller footprint the higher scoring shall be given during evaluation.
* The overall shape (top view) of the trailer (excluding stability legs/system) could look like this:



## EQUIPMENT

The telco equipment that shall be installed on the trailer consist of:

* One RBS of 80x80 size. Weight can vary between 100kg and 250kg.
* Two BBUs of 80x80 size each. Weight can vary between 200kg and 1500kg each.
* Two or three (2 or 3) masts, Ø114/3.2mm, 2m high, hosting 12 RRUs. Weight can vary between 60kg and 220kg.

On average the trailer floor structure should be able to sustain ~1000kg/m2.

## GENERATOR AND FUEL TANK

The generator shall have the following characteristics:

* Dimensioned for a total load of 45A @ 80%, 220VAC and unity Pf=1.
* Diesel power generator, single phase, 220VAC, 50Hz, with automatic mains failure AMF.
* Housed in a soundproof canopy, 65dBA at 1m from all sides, painted (color to be agreed upon) and under warrant for a minimum period of 3 years.
* The generator set shall be designed to include the installation of anti-vibration pads to reduce the vertical vibration frequencies
* The generator shall be equipped with a fuel tank of 750L capacity.

## ELECTRICAL REQUIREMENTS

### Automatic Transfer Switch (ATS)

* The CoW should be equipped with an automatic transfer switch (ATS) to control the generator (start, stop, fail, etc) and automatically switch between Mains power source and generator.
* The ATS shall include main circuit breakers, contactors with mechanical and electrical interlocks, voltage and frequency relays, timer relays, fuses holders, pilot lamps, selector switch, terminal blocks, etc.
* The ATS shall be capable to reporting alarm to MIC BTS through dry contact relays: GE ON, EDL ON, GE FAIL, etc.
* The ATS shall be housed in IP65 panel, lockable with key

### Electrical Distribution Board (EDB)

* The CoW should be equipped with an electrical distribution board (EDB) to supply the telco equipment and other components with 220VAC, 50Hz. EDB shall include the necessary protections against faults, leakage currents, SPD, etc.
* The EDB shall include, but not limited to: Main circuit breaker, Differential Switch, distribution CBs, socket outlet, SPD, Terminal blocks, etc.
* The ATS shall be capable to reporting alarm to MIC BTS through dry contact relays: CB trip, No Power, etc.

### Grounding system

* A ground system for all equipment and the trailer metallic structure (BTS, DG, winch, etc.).
* Items related to grounding system installation shall be provided: bus bars, cables, connections, earth ring addition, etc.

# DELIVERABLES

## TECHNICAL SOLUTION

The bidder shall present technical solutions for the below requested CoWs:

### 30m tower CoW, one trailer: 30m tower, outdoor equipment, generator, and fuel tank all on a single trailer.

### 20m tower CoW, one trailer: 20m tower, outdoor equipment, generator, and fuel tank all on a single trailer.

## DELIVERABLE DOCUMENTS

### Tower and wind calculations to be performed according to known American, European or French codes.

### All calculation notes (loads, overall CoW stability, efforts, deflection and members ratios) shall be provided.

### All specifications and datasheets of any component, electrical device, motor, etc... should be provided.

### Detailed drawings and elevations should be provided.

### Installation guide should be provided.

### A testing report should be provided.

## CoWs DELIVERY

The bidder shall submit a comprehensive time plan for the CoWs delivery.

In case the delivery will be in batches, the bidder shall commit to deliver complete units/CoWs with all accessories and needed parts for full operation.

Delivery time plan shall be evaluated, the faster delivery the higher scoring will be given during the evaluation.

# END OF SECTION