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CTA-N Infrastructure for CCF equipment

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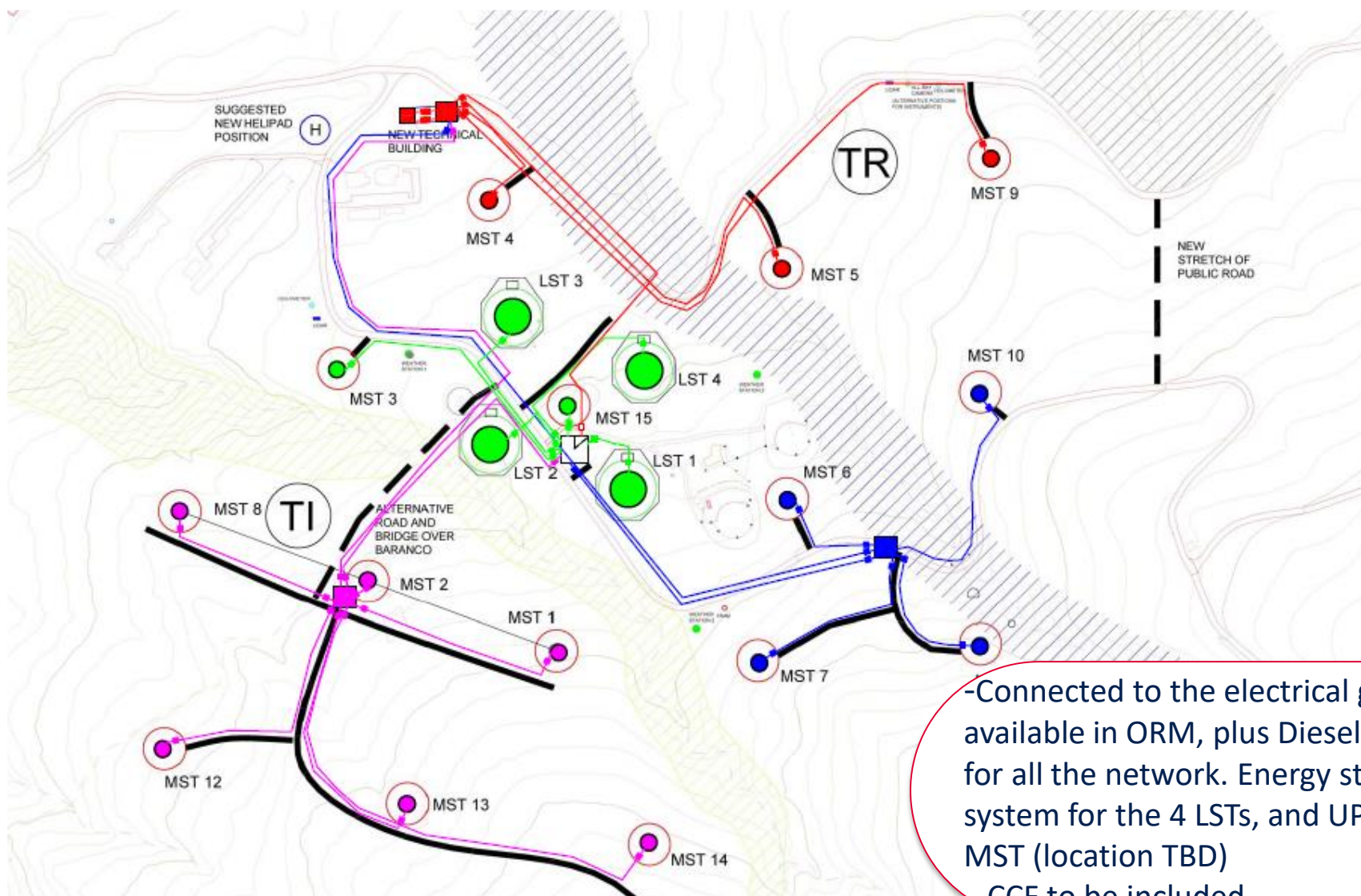


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CTA North: Proposal for Power cable layout – Baseline scenario



-Connected to the electrical grid available in ORM, plus Diesel Gen for all the network. Energy storage system for the 4 LSTs, and UPS for MST (location TBD)
CCF to be included

Power Infrastructure: CTA North Status Update



Power Requirements from the grid (big loads)

Item	Power consumption		Day	Night
	Mean Power	Peak Power		
	kW	kW	kW	kW
4 LST	88	240	8	240
5 MST	77,5	161,5	25	161,5
10 MST	155	323	50	323
PC farm	100	100	100	100
Operation Building	40	40	40	10
HVAC	10	10	10	0
19 telescopes	470,5	874,5	233	834,5
9 telescopes	315,5	551,5	183	511,5

Table 1

- Strategy for Detail design and Construction
 - Phase 1: LST 2,3,4 and MST 3 (MST 15 TBD). LST1 from Prototype stage. Datacenter in container. CCF according to table in next slide.
 - Phase 2: Technical Building plus other MSTs. 2nd Transformer beside Tech building. CCF according to table in next slide.

CCF and Infrastructure

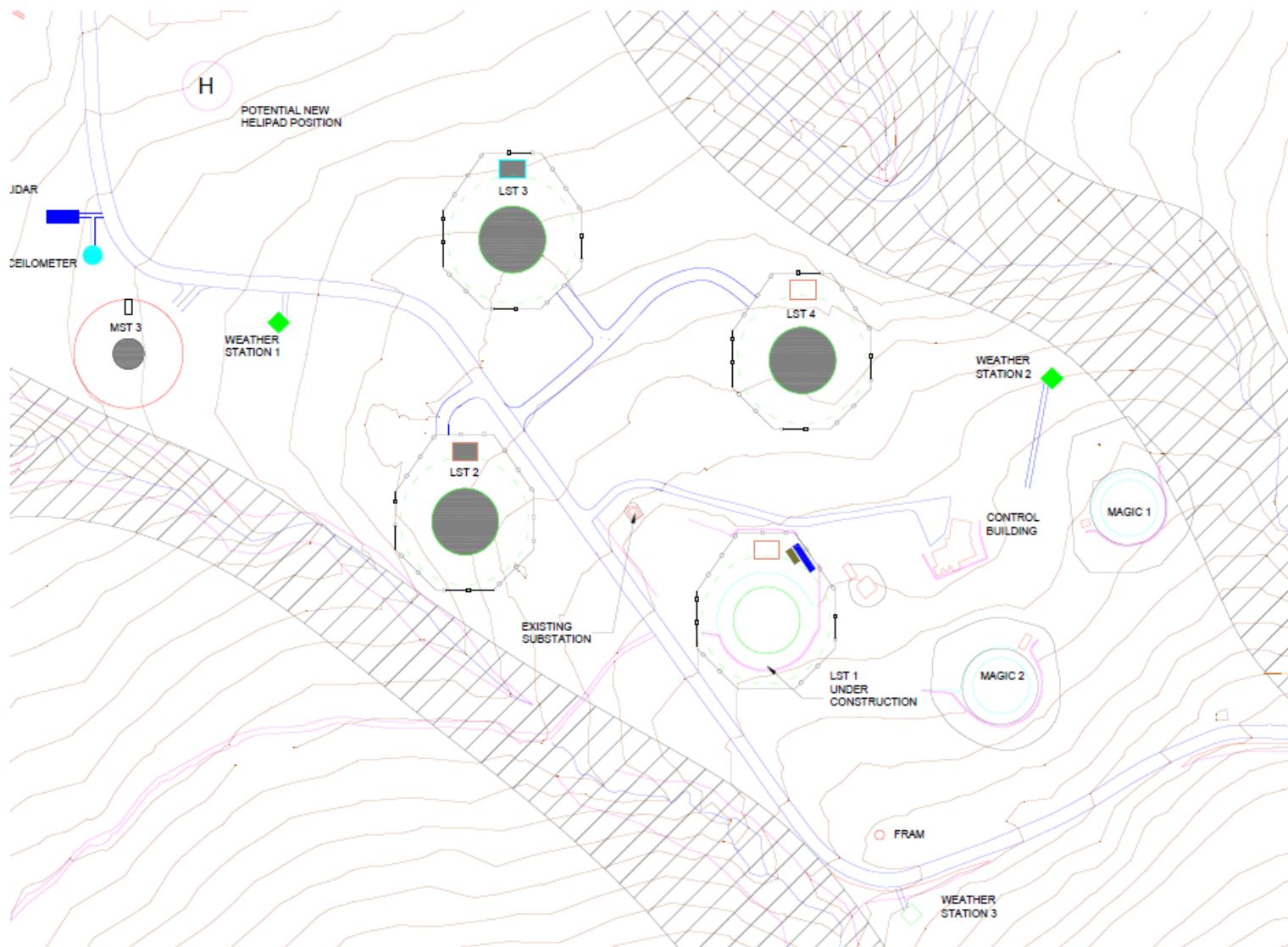


CCF Instrument Phase 1 or Phase 2

Raman Lidar	Ph1
All Sky Camera	Ph1
FRAMS	Ph1
Ceilometers	Ph1
Anemometers (*)	Ph1
Weather stations (*)	Ph1
Rain sensors (*)	Ph1
Illuminator 1 (**)	Ph1
Illuminator 2	Ph2
Electric Field mill	Ph2
Dust counter	Ph2

- Phase 1: LST 2,3,4 and MST 3 (MST 15 TBD). LST1 from Prototype stage. Datacenter in container.
Phase 2: Technical Building plus other MSTs.
- (*) To be located the 3 of them in a 10 m tower to be provided by Infra
- (**) Location asked on top of ORM needs further discussion in PO for Operational aspects

Proposed location for CCF Phase 1



CCF Power information required



CCF Instrument	Power Interfaces proposed, from Sharepoint Interfaces Datasheets					
	Peak power in KW	Mean power in KW	Voltage infeed	To be considered in case of power failure	connector/ cabling	Others
Raman Lidar	6	2	220-250 V, 32 A, 50 Hz		connector of type: 32 A, 3 Pin interlocked socket with plug waterproof IP67, 220-250 V, located at the center of the side part (the one which measures 7m)	both data and power ducts (separated) need to arrive in the middle of the side part (the one which is 7m long)
All Sky Camera	0,1	0,05				
FRAMS						
Ceilometers			2 infeeds, one for measurement unit 100V or 115V or 230V, 45-65 Hz, 10A max. fuse size, (3 phases + Neutral) . and other for PTU (24 VDC or 240 VAC)	Need to go to park position before sun comes out	Power Line : 4-pole, connector Type Binder series 693, 99-4222-70-04 (fe- male) elbow	
Anemometers						
Weather stations						
Rain sensors						
Illuminator 1			Rechargeable power system not connected to the Central power system (because will be used on top of ORM)			

CCF Data information required



CCF Instrument	Data network access			
	Data cabling and Interface switch (On site ITC)	Data connection to the instrument (CCF)	Data connection to Datacenter end (On site ITC)	Applications to be accessed from central CTA software system/ Communication
Raman Lidar	fiber from Datacenter to comm equipment, Number of fibers TBD by on site ITC. Comm equipment and fiber to be provided by On site ITC.	ethernet port. Connection to the copper port in the communication equipment to be done by CCF	TBD by On site ITC	
All Sky Camera	fiber from Datacenter to comm equipment, Number of fibers TBD by on site ITC. Comm equipment and fiber to be provided by On site ITC.	ethernet port. Connection to the copper port in the communication equipment to be done by CCF	TBD by On site ITC	
FRAMS	fiber from Datacenter to comm equipment, Number of fibers TBD by on site ITC. Comm equipment and fiber to be provided by On site ITC.	ethernet port. Connection to the copper port in the communication equipment to be done by CCF	TBD by On site ITC	
Ceilmeters	fiber from Datacenter to comm equipment, Number of fibers TBD by on site ITC. Comm equipment and fiber to be provided by On site ITC.	ethernet port. Connection to the copper port in the communication equipment to be done by CCF	TBD by On site ITC	
Anemometers	fiber from Datacenter to switch in the tower, Number of fibers TBD by on site ITC, copper from switch to the instrument. Switch and fiber to be provided by On site ITC. Cabinet for the switch TBD by Infra	ethernet port. Connection to the copper port in the switch in the tower to be done by CCF	TBD by On site ITC	
Weather stations	fiber from Datacenter to switch in the tower, Number of fibers TBD by on site ITC, copper from switch to the instrument. Switch and fiber to be provided by On site ITC. Cabinet for the switch TBD by Infra	ethernet port. Connection to the copper port in the switch in the tower to be done by CCF	TBD by On site ITC	
Rain sensors	fiber from Datacenter to switch in the tower, Number of fibers TBD by on site ITC, copper from switch to the instrument. Switch and fiber to be provided by On site ITC. Cabinet for the switch TBD by Infra	ethernet port. Connection to the copper port in the switch in the tower to be done by CCF	TBD by On site ITC	
Illuminator 1	long range Wi-fi (5 km)		TBD	

Summary



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- We need your help to complete the missing information, for Power and Data
 - Thanks!



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....Questions?

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Backup: On Site Power Infrastructure Design



Both for Northern and Southern sites:

- Methodology of design in stages, based on existing requirements, and elaborated with external consultants.
 - 1st stage Conceptual Design and Study of Alternatives
 - 2nd stage Detailed Design
 - 3rd stage Tendering Process for Construction
- Each stage will go under internal and external reviews
- In stage 1 in parallel the following activities are included:
 - Review of existing Requirements
 - Interfaces definition
 - Coordinate for RAMS evaluation
- If necessary, stage 2 can be split in phases

Status:

- New Requirements proposed in iteration
- Southern site has a Concept Design from 2015 that needs update and review
- Northern site has a Concept study in elaboration – on going preliminary internal review