




cherenkov
telescope
array

CTA-North On-Site Infrastructure Update



David Bristow CTAO-PO Infrastructure Design Coordinator
Email: david.bristow@cta-observatory.org
SE – Infra Project Team Technical Meeting


Systems Engineering and On-Site Infrastructure Project Coordination Meeting

Tuesday 11 Sep 2018, 13:00 → 18:00 Europe/Berlin  David Bristow (CTAO)

13:00	→ 13:05	Approval of Meeting Minutes ⌚ 5m
		Speaker: David Bristow (CTAO)
13:10	→ 13:30	Action Points - ⌚ 20m
		Speaker: David Bristow (CTAO)
13:30	→ 13:50	Project Team - roles and responsibility ⌚ 20m
		Speaker: David Bristow (CTAO)
13:50	→ 14:10	Document Control and New Sharepoint ⌚ 20m
		Speaker: David Bristow (CTAO)
14:10	→ 14:30	Schedule ⌚ 20m
		Speaker: Cesar Ocampo (CTAO)
14:30	→ 14:50	WBs and PBS Proposals ⌚ 20m
		Speaker: Cesar Ocampo (CTAO)
14:50	→ 15:10	Interface Management Plan ⌚ 20m
		Speaker: Stephen Brown (CTAO)
15:10	→ 15:30	Interlocks and SAS ⌚ 20m
		Speaker: Gino Tosti (INAF/University of Perugia)
15:30	→ 15:50	Technical Building *as a project* ⌚ 20m
		Speaker: David Bristow (CTAO)
15:50	→ 16:10	Mechanical and Civil Interfaces ⌚ 20m
		Speaker: Stephen Brown (CTAO)
16:10	→ 16:30	Cost Book ⌚ 20m
		Speaker: Cesar Ocampo (CTAO)
16:30	→ 16:50	AOB ⌚ 20m
		Speaker: Cesar Ocampo (CTAO)

Approval of Minutes



	CTA	Ref.:
	System Engineering and On-site Infra Project Meeting	Version: 1.0
		Date: 2017-11-30
		Page: 2/8

Action Items

DB to fully scope INFRA short project 1. WA to advise on Interface and Equipment

WA to produce a description of the Array Stop function for power distribution – will be subject to Safety Engineers approval.

WA to produce a description for Interlocks functionality and its interface with the Infra Power Distribution system

WA to layout project plan document for CTAN, including elements additional to Infrastructure

SB to forward FD copy of La Palma seismic design code NCSE-02

SB to talk with IAC Civil Engineer with regards to Codes of Design for Wind for La-Palma – feed back to FD.

JH to add 0.05g as a Seismic a requirement for CTAN in Jama

Gino will send a written concept for Interlocks system

CTA-N Project Update



- CTA-N Project Update
 - Project Development Meeting held with IAC and CTAO on 5th June with Ramon Garcia Lopez and Javier Herrera at La Laguna, Tenerife
 - Short Project Planning meeting held with IAC and CTAO on 25th June with Javier Herrera at La Palma
 - Technical Building Control Room Design Workshop in DESY held on 3rd and 4th July with Igor and Iftech...
 - Technical Building Phase 2 Tendering meeting held with IAC *Yanira* and CTAO on 17th July.
- The Following Topics were discussed
 - Initial Planning of the next phases of the CTA-N project with IAC
 - Short Project schedule and proposed provisional schedule for the next phases of the project inline with FEDER funding
 - Detailed Design contract planning strategy and coordination
 - CTA-N site establishment strategy
 - Geotechnical Site Investigation Study
 - CTA-N Safety Health and Environment Plan

Document Control – Quick Overview



EXISTING SITUATION – WHERE WE ARE

Project documents , externally and internally produced are being stored in a variety of ways.

- The old SharePoint system– no longer supported.
- Indico – documents “hidden” as attachments to meetings.
- Personal external drives i.e pen drives and storage drives.
- Personal cloud based systems – “One Drive” “Google Docs” etc.
- Computer disc drive i.e C: Drive on Laptops
- As attachments to emails.

The screenshot shows the Autodesk BIM 360 Document Management web interface. The browser address bar displays the URL: <https://docs.b360.autodesk.com/projects/3d0b04b8-0a09-467e-bd8f-db8467cb483d/folders/urn:adsk.wiprod:fs.folder:co.4bCc-UTHTzWnEKfpJYeK6w/detail>. The page title is "Document Management" with tabs for "FOLDERS" and "ISSUES".

On the left, there is a navigation pane with "View by" options for "Folders" and "Sets". Under "CAD FILES", there are folders for "5.2 North", "5.3 South", "EA Drawings 092-338", "North Short Project", and "WP 05-09". Under "5. PLANS AND DOCUMENTS", there are folders for "00 Doc", "5.2 North", "5.3 South", "BIM HELP FILES", "DRAWINGS AND DOCUMENTS.12", "EA Documents 092-338", "North Short Project", "QS Call off", "Seismic Report", and "WP 05-09".

The main content area features an "Upload" button and a search bar labeled "Search for documents". Below this is a table listing documents:

<input type="checkbox"/>	Name ▲	Set ▼	Version	Last updated	Updated by	Markup	Issue	File Name
<input type="checkbox"/>	Folder 5.2 North	--	--	6 Sep, 2018 8:18 am	Stephen Brown	--	--	--
<input type="checkbox"/>	Folder 5.3 South	--	--	6 Sep, 2018 8:18 am	Stephen Brown	--	--	--
<input type="checkbox"/>	Folder EA Drawings 092-338	--	--	13 Sep, 2017 11:39 am	Stephen Brown	--	--	--
<input type="checkbox"/>	Folder North Short Project	--	--	31 Jan, 2018 2:10 pm	Stephen Brown	--	--	--
<input type="checkbox"/>	Folder WP 05-09	--	--	21 Feb, 2018 5:26 pm	Stephen Brown	--	--	--

The Windows taskbar at the bottom shows the system tray with the date and time: 11:21 11/09/2018.

Document Control – Quick Overview



EXISTING SITUATION – THE DANGERS

- Lost or damaged external drives – sensitive information being accessed by third party or irretrievable information.
- Stolen PC
- Inaccessibility of cloud sites other than by the owner – what happens when a member of staff leaves the CTAO ?
- Information on PC is not backed up
- Information with in emails difficult to find and not accessible to everyone that may need it.
- Information within Indico can only be found by having the knowledge that it exists there in the first place!
- Old SharePoint will at some point be switched off.

New Sharepoint Infra Page



Mail – david.bristow@cta-oi | Infrastructure - Home | <https://ctaobservatory.sharepoint.com/sites/Infrastructure>

SharePoint | David Bristow

Search this site

- Home
- Conversations
- Documents
- Notebook
- Pages
- Site contents
- Recycle bin
- Edit

INFRA	Information based on the existing situation. Information based on the existing situation. Information based on the existing situation.	Information based on the existing situation. Information based on the existing situation. Information based on the existing situation.	Information based on the existing situation. Information based on the existing situation. Information based on the existing situation.
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sTs	N/A	Information based on the existing situation. Information based on the existing situation. Information based on the existing situation.	Information based on the existing situation. Information based on the existing situation. Information based on the existing situation.
COM	N/A	Information based on the existing situation. Information based on the existing situation. Information based on the existing situation.	Information based on the existing situation. Information based on the existing situation. Information based on the existing situation.

Interface relationship diagram

Found a couple of images that I hadn't seen before on SharePoint - I have saved them here Interface relationship diagram. Also the originals are in share poi...

Stephen Brown
August 16
1 view

- Learn about a team site
- Learn how to add a page

Activity

Document Control – Quick Overview

EXISTING SITUATION – WHERE WE ARE

Project documents, internally and externally produced are being stored in a variety of ways.

add SharePoint system – no longer supported.

documents "hidden" as attachments to meetings.

local external drives (e.g. pen drives and storage drives).

Personal cloud based systems: "One Drive", "Google Drive" etc.

Documents

filling of docs.pptx

Stephen Brown
Added 19 hours ago

Documents

Interface Data Sheets

Stephen Brown
Edited 5 days ago

Documents

3 files were added

Sebastian Stober
Added files 5 days ago

See all

Documents

See all

+ New | Upload | All Documents

Name	Modified
CTA-NORTH PROJECT DOCUM...	September
CTA-SOUTH PROJECT DOCUM...	September
Design Criteria	August 2
General	August 16
Interface Data Sheets	5 days ago
CTA PBS document v4 (1).pdf	August 16
INTERF-Q-118.pdf	August 17
PBS document v1.3 (1).pdf	August 16

Get the mobile app | Feedback

Document Control – Quick Overview



WHAT WE NEED TO DO COLLECTIVELY.

- Working documents i.e those that are in draft /not for distribution to be saved within new SharePoint system set up by Sebastian. There is a INFRASTRUCTURE area that is closed to our group.
- We need to agree file structure for that and would suggest that it follows Cesars WBS. Why try and re-invent the wheel?
- BIM 360 docs to be used for the filing of all Plans and Documents produced internally and externally FINAL or APPROVED documents
- BIM 360 to be used for tracking of revisions and issues.
- The practice of e-mailing of documents as attachment is to cease.
- New SharePoint and BIM 360 docs has a “share” button to alert the necessary recipients of its existence.

Document Control – Quick Overview



Advantages of New SharePoint and BIM 360 Docs

- Allows CTA PO control of who sees a document and how they can use it.
- No loss of data.
- Security.
- BIM Version Control.
- Accessing the right information and sharing of information is easier

CTA-N Design and Construction Phasing



- The Design and construction has been split into 3 phases of Design and Construction

- **PHASE 1 - Design and Construction process for the CTA-North site:**

- Scope of Work of the smaller project or the 'Short Project'

- The remaining LST foundations (LST 2 – 4), the first MST foundation (MST 3)
 - CCF Equipment: Ramon Lidar, All Sky Camera, FRAM, Ceilometer, Anemometers, Weather Station x 3, Illuminator and rain sensors.
 - Roads, Power, Infrastructure and Data networks

- **PHASE 2 - Design and Construction process for the CTA-North site:**

- Scope of Work for phase 2 – Threshold Scenario

- Start detailed Design for phase 2 – January 2019 (provisional)
 - Technical Building
 - 4 Further MST Foundations *to be confirmed*
 - Roads, Power, Infrastructure and Data networks

- **PHASE 3 - Design and Construction process for the CTA-North site:**

- Scope of Work for phase 3

- Start Detailed Design for phase 3 – June 2019 (provisional)
 - Remaining MST Foundations
 - Roads, Power, Infrastructure and Data networks

- All Phases of the Construction should be completed by December 2022....***

Action Point



- PC-63_02: The schedule of the CTA-N short project needs to be clarified focusing on when CTAO needs to deliver definitions to IAC for the tender process of the detailed design.

Responsible: C. Ocampo+ (D. Bristow) Deadline:23/07/2018 » C. Ocampo & D. Bristow went to IAC and the schedule has been updated. See David's report on infrastructures.

[Completed]

Hosting Agreement MoU - Annex 6

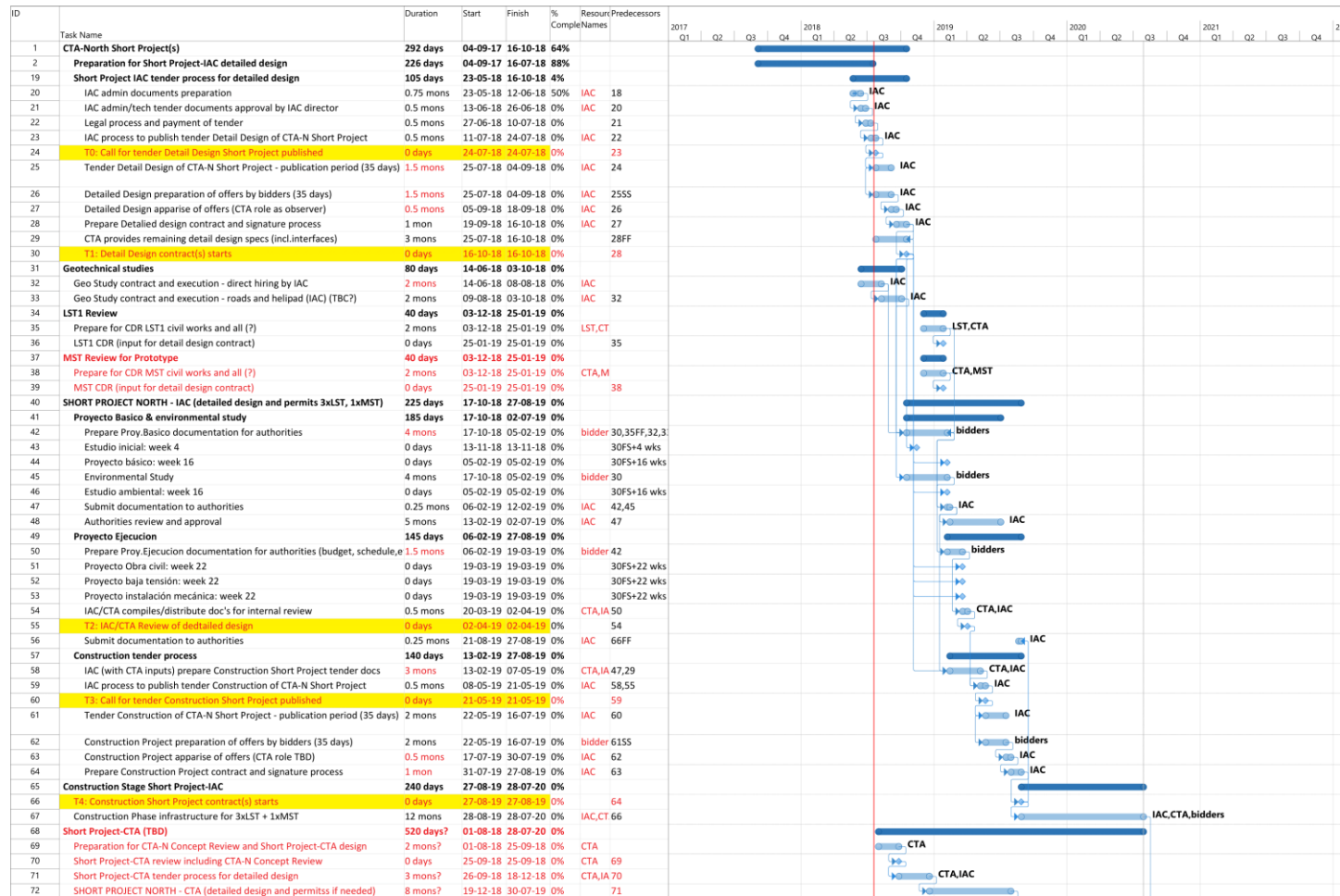


- Annex 6 - provides further organizational details and arrangements not covered in the IAC – CTAO Hosting Agreement for the proposed design and construction CTAO Observatory at the Observatorio Del Roque De Los Muchachos.
- CTAO and the IAC will be involved in all stages of the Design and Construction of the CTA-North Array. The object of this document is to assign clear ‘roles and responsibilities’ to the both parties for the key project phases at the Observatorio Del Roque De Los Muchachos.

- **Project Definition**
- **Strategy and scope of Procurement**
- **Procurement and Tendering**
- **Design**
- **Contract Management Construction**
- **Commissioning**
- **Acceptance**
- **Operation**

MEMORANDUM OF UNDERSTANDING
ON THE
INTERPRETATION
OF THE
AGREEMENT RELATING TO
HOSTING THE
NORTHERN ARRAY OF THE CHERENKOV TELESCOPE
ARRAY OBSERVATORY
AT THE OBSERVATORIO DEL ROQUE DE LOS
MUCHACHOS (“ORM”)
between the
INSTITUTO DE ASTROFÍSICA DE CANARIAS
and the
CHERENKOV TELESCOPE ARRAY OBSERVATORY gGmbH
signed in Heidelberg on 19/09/2016
(hereinafter called “the Agreement”)

CTA-N Schedule



Short project schedule_180720.mpp

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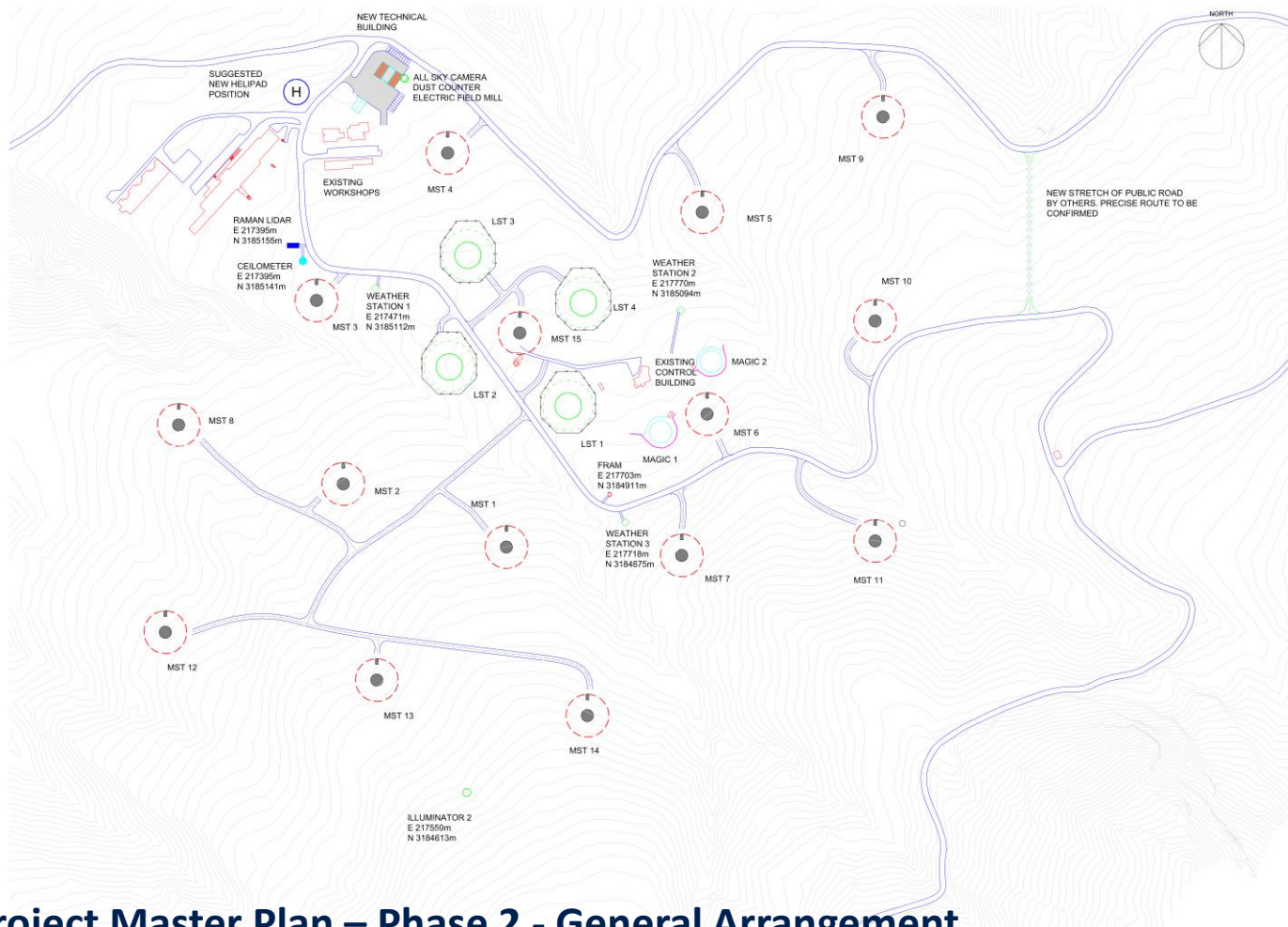
20-07-18

CTA-N Preliminary Schedule



- **Phase 1 Design Schedule LST, MST 'Short Project'**
 - Detailed Design Q2 2018 to Q4 2018
 - Critical Design Review – April 2019
 - Start construction phase 1 Q2 – Q3 2019
 - Complete Infrastructure construction of phase 1 - Q4 – Q1 2021
- **Phase 2 Design Schedule Main Project and Master Plan**
 - Detailed Design Q4 2018 to Q2 2019
 - Start Infrastructure Construction phase 2 - **earliest** Q4 2019

CTA-N Master Plan



Project Master Plan – Phase 2 - General Arrangement

PC64 Meeting, Bologna July 2018

REV.	DESCRIPTION	DATE
PT	ROAD FOR ROADWORK	2017/11
PF	ROAD FOR ROADWORK TO BE CONFIRMED FOR ROADWORK	2017/11
PZ	ROAD WORK APPROVED	2017/11
PL	GENERAL ARRANGEMENT	2017/11



TITLE
 CHERENKOV TELESCOPE ARRAY
 CTA NORTH - ORM
 SHORT PROJECT PHASE 1
 CSI MASTER PLAN

SCALE	DATE	DRAWN	CHECKED
1:1000	2017/11	SLB	DR
DRAWING NUMBER	REVISION		
INFRA-DES-100-035 N	P4		
ORIGINAL DRAWING SHEET SIZE: A1			

PHASE 1 – Tendering and Procurement for phase 1 of the Detailed Design

- IAC – CTA working together to produce the Tender documents – both technical and Legal documents
- CTA – providing Technical and Concept Design Support
- IAC – Tendering and Procurement Framework Documents
- European Wide - call for tender to be issued for the Engineering Services for the Architectural, Mechanical and Electrical Services *Estimated cost 300kE*

Technical Building...Phase 2 Tender



- Start the Building Concept Planning of the Technical building in preparation for the next Detailed Design Contract.
- There are a number of stakeholders involved.
 - Data Centre - with dedicated UPS and Cooling system, Control Room, Staff Offices, Meeting rooms, Kitchens, Toilets/ Showers, Storage Rooms, Electronic workshop, Mechanical workshop, Dedicated heating system and air conditioner for the building, Vehicle Parking,
 - Room for the Power equipment transformer/ electrical room, HVAC, Room for centralized UPS system, Reception Area, Mirror recoating facilities, First Aid Room....Etc.

CTA-N Geotechnical Study



- Scope of work and tender documents now complete for the Geotechnical Study
 - 3 boreholes per telescope foundation
 - Drilled to a depth of 12 metres
 - 'Peak Ground Accerlation' for La Palma 0.05g
 - Study includes Seismic Response Spectrum
 - Study incompliance with Spanish Seismic standards NCSE-02

Tender will issued next week...Budget will be 30kE to be paid by IAC

CTAO in La Palma – Stage 1



- CTAO Establishment in La Palma
 - Staff working from La Palma later this year: CTA-N Site Manager, Outreach Officer and PO staff members.
 - Staff offices at the CALP Building and ORM discussed with IAC.
 - PPE, Personnel Protective Equipment for PO Staff and CTAO visitors to the ORM site. To be ordered from Tenerife and delivered to CALP.
 - Field Radio for Staff Safety and communications
 - Vehicles (leased – dealers contacted and quotes expected this week)
 - Registered place of work and NIF registration Number, La Palma.
 - CTAO Spanish Bank Account –

CALP (Centro de Astrofísica en La Palma) (Breña Baja, LA PALMA).

Instituto de Astrofísica de Canarias

Apdo. Correos 50

C/ Cuesta de San José, s/n

San Antonio

38712 - Breña Baja (La Palma). España

CTAO will contribute to the Common Services Costs for the maintenance and operations costs of the CALP facility.

ORM – IAC Technical Building



CTAO Office at ORM.....located in the existing Technical Building

CALP – IAC CALP Building



CTAO – Office at Sea Level



CALP (Centro de Astrofísica en La Palma) (Breña Baja, LA PALMA).
Instituto de Astrofísica de Canarias
Apdo. Correos 50
C/ Cuesta de San José, s/n
San Antonio
38712 - Breña Baja (La Palma). España

On-going Project Planning and PO Activities



- Project Planning for the Short Project Detailed Design contract and beyond for the CTA-N project
 - *Project Plan Document - Execution (All)*, including development of the following: Design Risk Register, Construction Risk Register, Construction Schedule Phase 1 and beyond), Construction Sequence Planning, Assembly Sequence Planning and interfaces.
 - *Site Definition and Interfaces* (Carla, David), defining the location of telescopes and CCF equipment with coordinates, connection to existing fibre and power networks.
 - *CTAO Site Establishment* on La Palma (David), discuss with IAC for Offices at the CALP building and the ORM. Staff Personnel Protective Equipment (PPE) and CTAO Vehicles for Site Manager and PO staff. CTAO to contribute to the Common Services Costs for these facilities.
 - *Safety, Health and Environment* (SHE) document (Steve), planning with IAC the policies and procedures to manage for health and safety of all workers during Construction activities.

All Activities to be completed for September/October for the start of the Detailed Design Contract for the Short Project.....

Further Activities for the Infra Team....



- Coordinate Infra Activities with Systems Engineering
- Prepare Brief for Technical Building.
- Finalise Infra Requirements – including Technical building
- Infra Project Plan document
- Coordination Activities with IAC regarding detailed design phase
- Define Interfaces and establish actions
- Etc.....

Thank you

Questions?

Email: david.bristow@cta-observatory.org

Backup

Visitors Centre

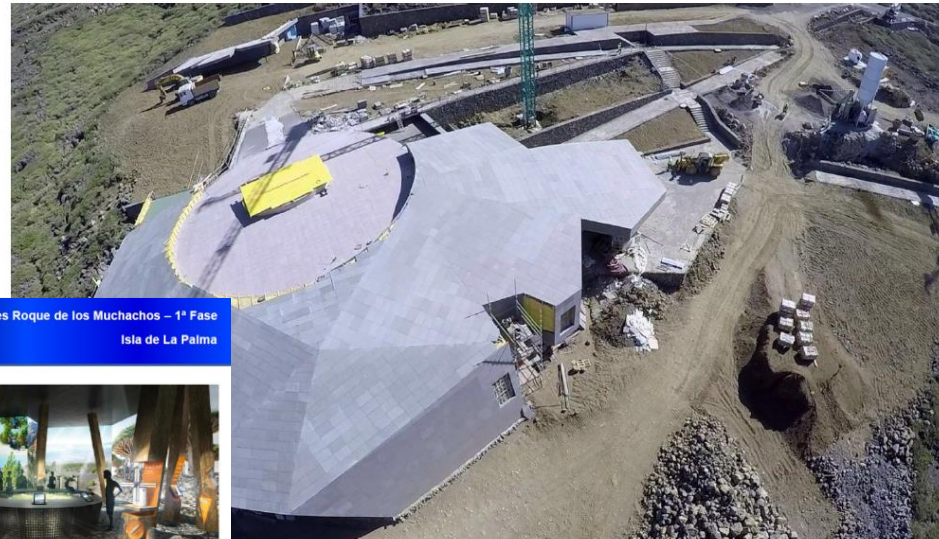


ECAN FONDO DE DESARROLLO DE CANARIAS

Centro de Visitantes Roque de los Muchachos – 1ª Fase
Isla de La Palma

Edificio: **NOVIEMBRE-2017**

ECAN FONDO DE DESARROLLO DE CANARIAS
Centro de Visitantes Roque de los Muchachos – 1ª Fase
Isla de La Palma



ECAN FONDO DE DESARROLLO DE CANARIAS
Centro de Visitantes Roque de los Muchachos – 1ª Fase
Isla de La Palma



Visitors Centre construction nearing completion...

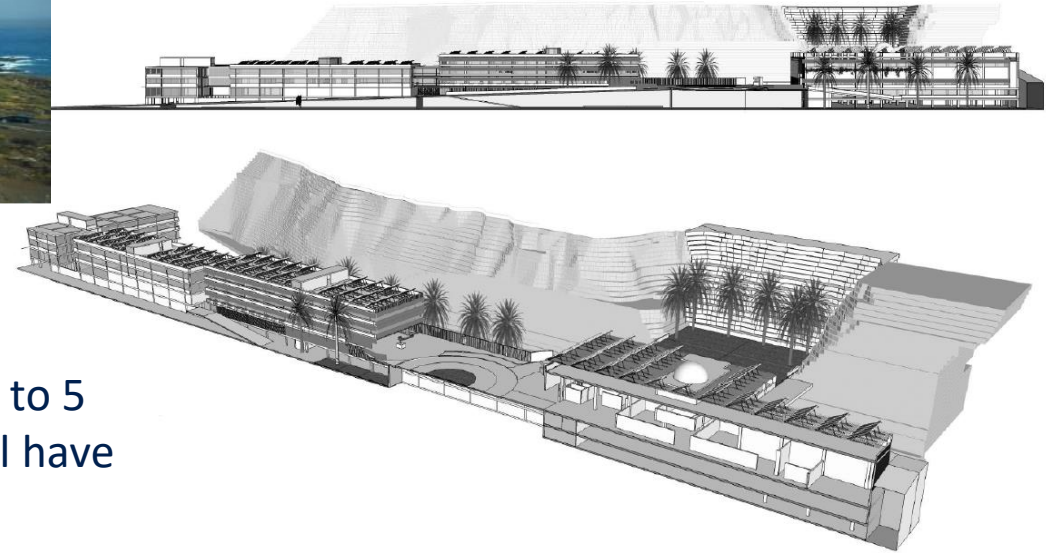
ECAN FONDO DE DESARROLLO DE CANARIAS
Gobierno de Canarias
Cabildo de La Palma

CALTEC Building



Central Scientific and Technology Centre located close to the Airport

Vista panorámica: Terrenos Adquiridos por el Cabildo Insular de La Palma

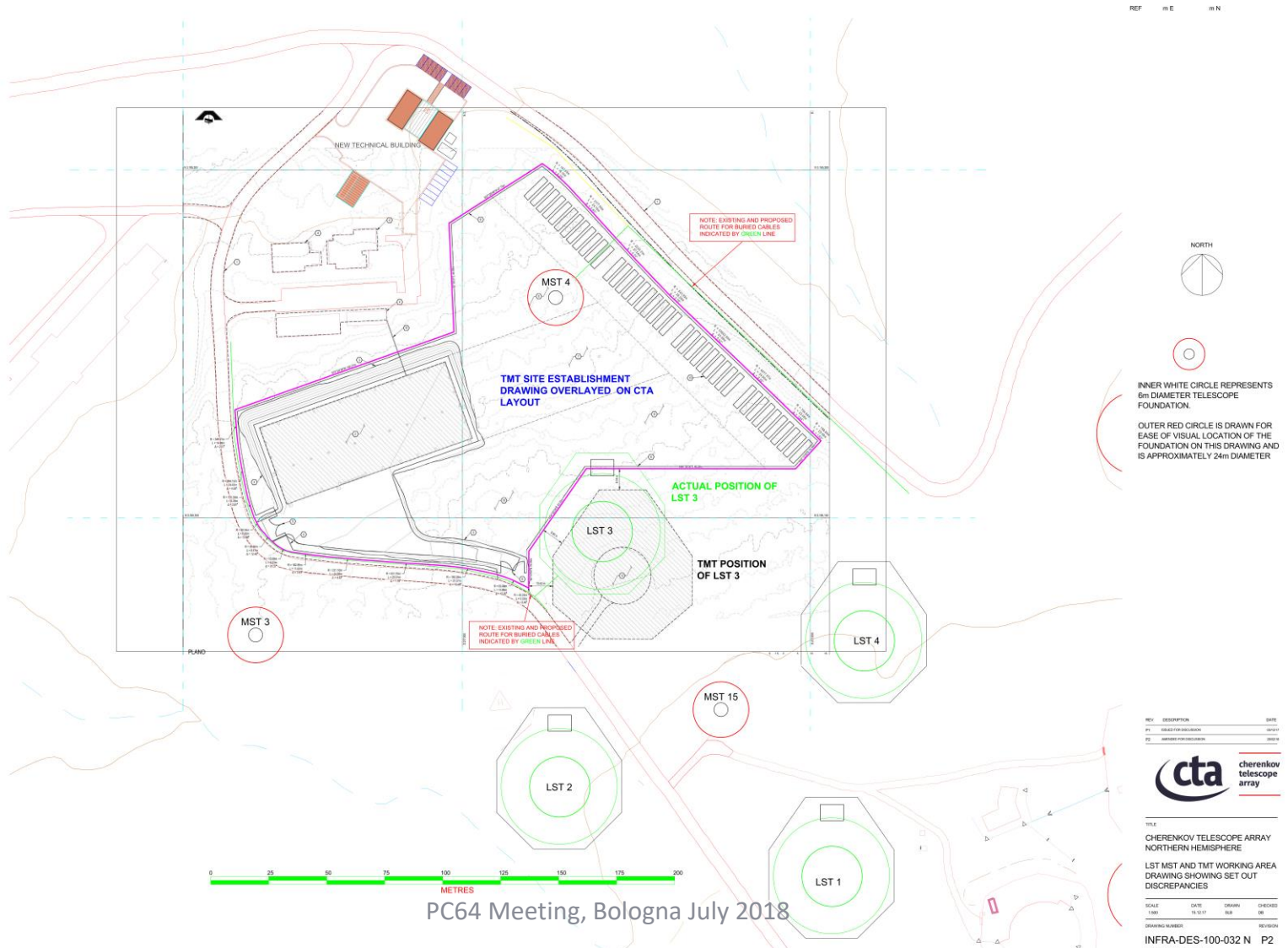


Further information:

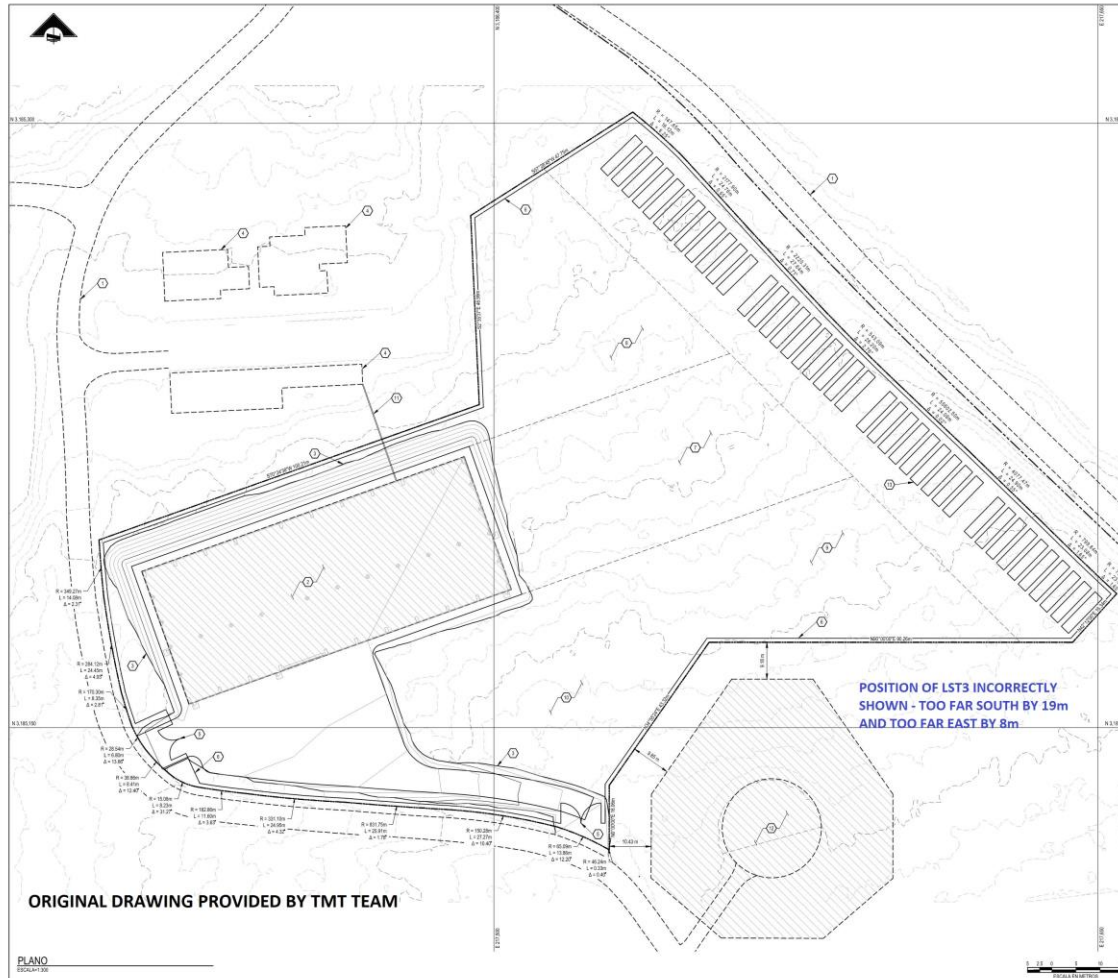
CALTEC building will be complete in 4 to 5 years and it is expected that CATO will have sufficient office space to 20 staff.

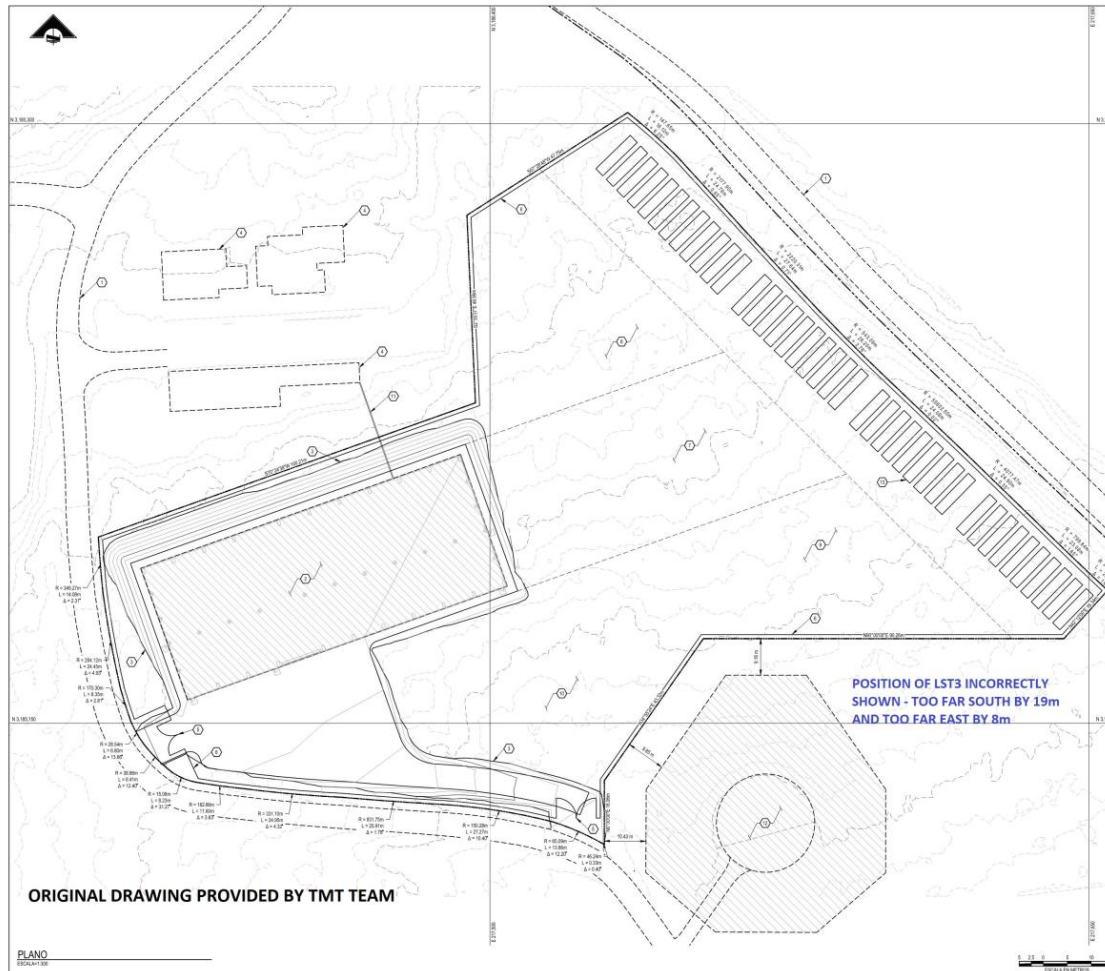


TMT Proposed Assembly Area Overlay



PC64 Meeting, Bologna July 2018





CTA-N Laser Plan – Phase 1



Instruments: included as part of the phase 1

All coordinates based on WGS 84 system of coordinates

Instrument	Position/coordinate	Project Phase
• Raman Lidar	E217395m – N3185155m	Ph1
• All Sky Camera	Temp Position Site Office	Ph1
• FRAM	E217703m – N318491m	Ph1
• Ceilometers	E217395m – N 3185141m	Ph1
• Anemometers	Weather Station	Ph1
• Weather Station 1	E217471m – N3185112m	Ph1
• Weather Station 2	E217777m – N3185094m	Ph1
• Weather Station 3	E217718m – N3184875m	Ph1
• Illuminator 1	E217949m – N3184382m	Ph1
• Rain Sensors	Weather Station	Ph1
• Instrument Positions – subject to further site engineering		