

**India
Observatory**

**COMPOSITE LANDSCAPE ASSESSMENT
& RESTORATION TOOL [CLART]
ANDROID APP
USER'S MANUAL**



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1. About CLART:

The **Composite Land Assessment & Restoration Tool (C.L.A.R.T)** Android Application.

CLART is a Geographic Information System (GIS) based Android tool –developed to enhance the planning of region-specific soil and water conservation measures. CLART enables rural communities in designing measures that would either help recharge of ground water or augment surface water availability, depending upon the location specific geo-hydrological characteristics. Made available in a user-friendly manner for semi-literate village communities, it enables them to undertake major part of the planning and designing, thereby assisting the local government functionaries in speeding the process of approvals, as well as improving the efficacy of ground level implementation.

1.1 Salient Features:

- Provides location specific information, thus improving planning and decision-making by 70-80%.
- User-friendly, open-source tool installed on Android devices.
- Works offline with devices' inbuilt GPS pinpointing the exact location on the map. The colour codes further suggest possible activities.
- Collects, saves evidence offline (photograph, Lat/Long and a set of questions), that can be synchronized to the web portal, once the device connects to the web.

1.2 How the app works:

The tool analyses publicly available data sets on lithology, geomorphology, lineament, watershed, drainage, slope, land use and land cover and makes recommendations through colour coded maps on a mobile device. Enabled to work without internet connection, village-level functionaries could visit the locations and by using the inbuilt GPS on their phone, the CLART guides them on specific recommendations for soil and water conservation measures for that specific site. Such recommendations are aligned with the specific activities allowed under MGNREGA. After identifying a location-specific intervention, the user can input basic measurements such as length, width and height (of the proposed activity) into the app-based estimation tool. Based on this, CLART generates an estimate of approximate cost, labour days and the sketch of the engineering design for the proposed intervention. All the information is saved offline and synchronized with server when online, for preparing detailed project plans.

1.3 To know more:

Follow the given link to know more about the app and India Observatory:

[CLART Tool @ India Observatory](#)

2. App Onboarding Process:

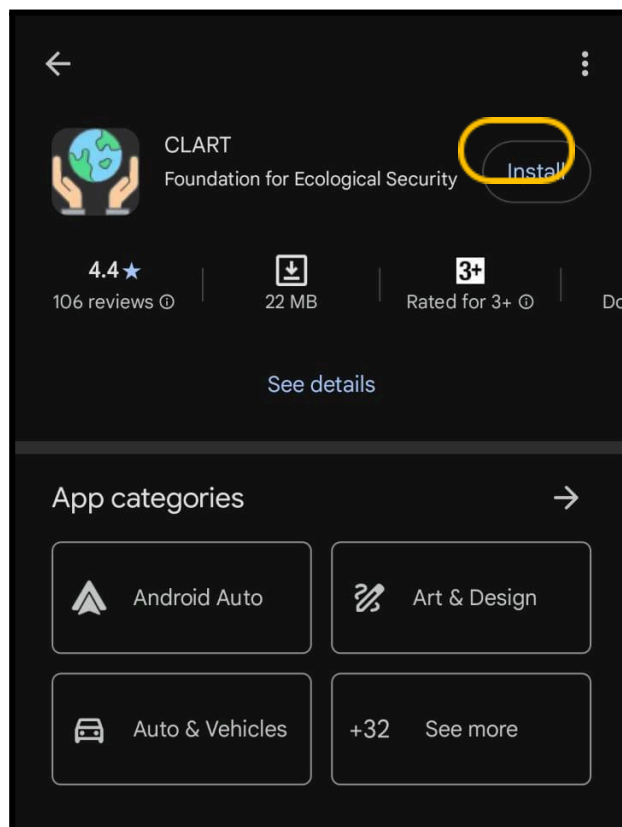
This section will deal with the following points of the App Onboarding Process:

- App Installation
- User's Consent
- User Registration
- App Navigation

2.1 App Installation:

The App can be downloaded from the [Google Playstore](#).

Follow the link provided above and download the app on your android device.



Click on the **Install** button as highlighted in the picture shown above.

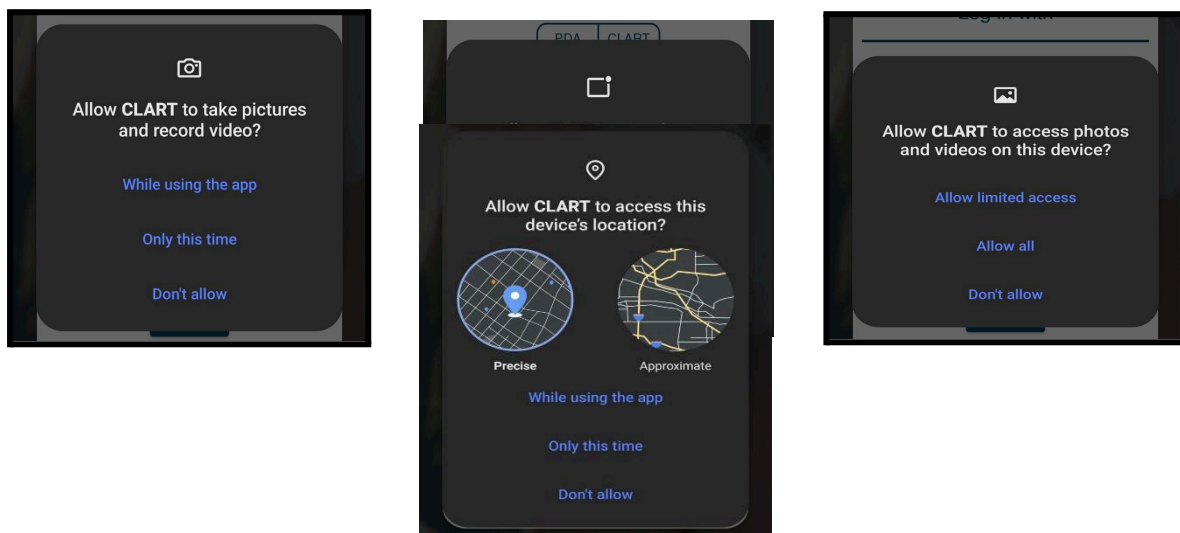
2.2 User's Consent:

For the app to work as intended it requires access to certain features of the device as listed below:

- **CAMERA**
- **LOCATION**
- **STORAGE**
- **NOTIFICATION**

The user is advised to permit all the requests displayed when the App is opened for the first time.

Pop-Up boxes similar to the following might be displayed:



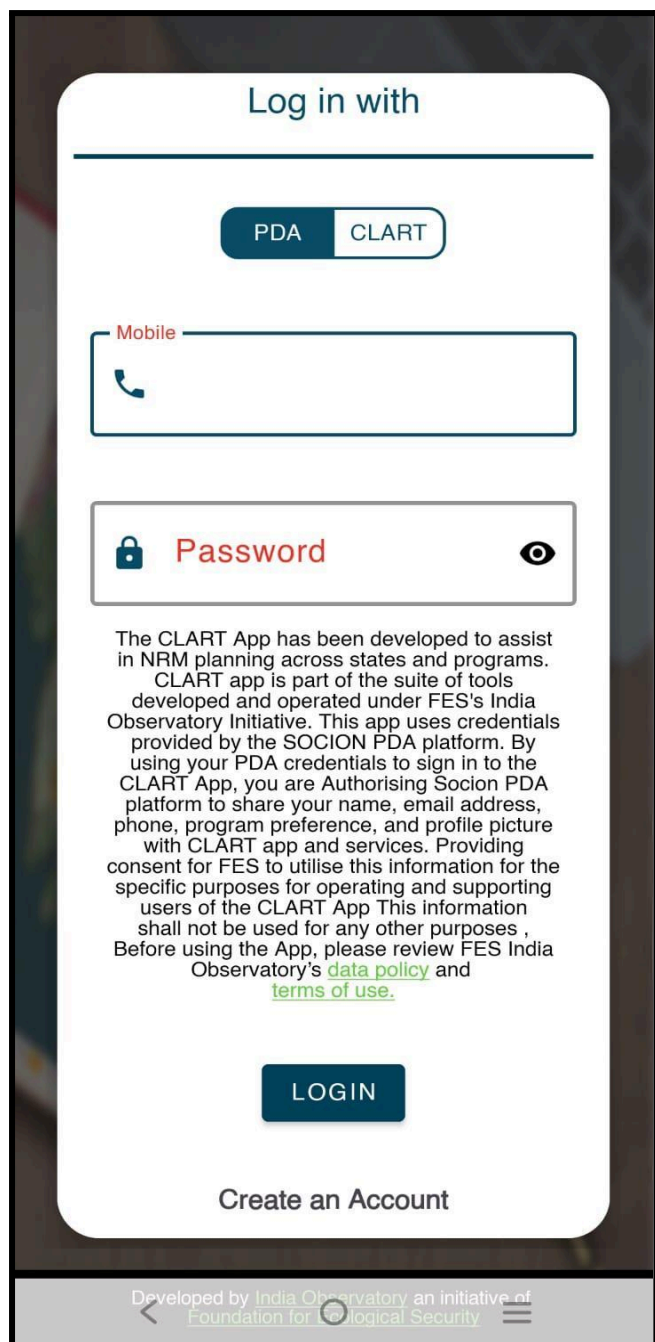
Click on **ALLOW** for all such requests that are displayed when the app is loaded.

DO NOT SKIP THIS PROCESS.

If the User fails to give access to the above-mentioned functions, then the app may misbehave and not work as intended.

2.3 User Registration:

After Installing and permitting the app of the required functions the app would display this:



The left screenshot shows the login screen with the 'CLART' toggle selected. It features a 'Mobile' input field with a phone icon, a 'Password' field with a lock icon and an eye toggle, a 'LOGIN' button, and a 'Create an Account' link at the bottom. A detailed disclaimer paragraph is present below the password field.

Log in with

PDA CLART

Mobile

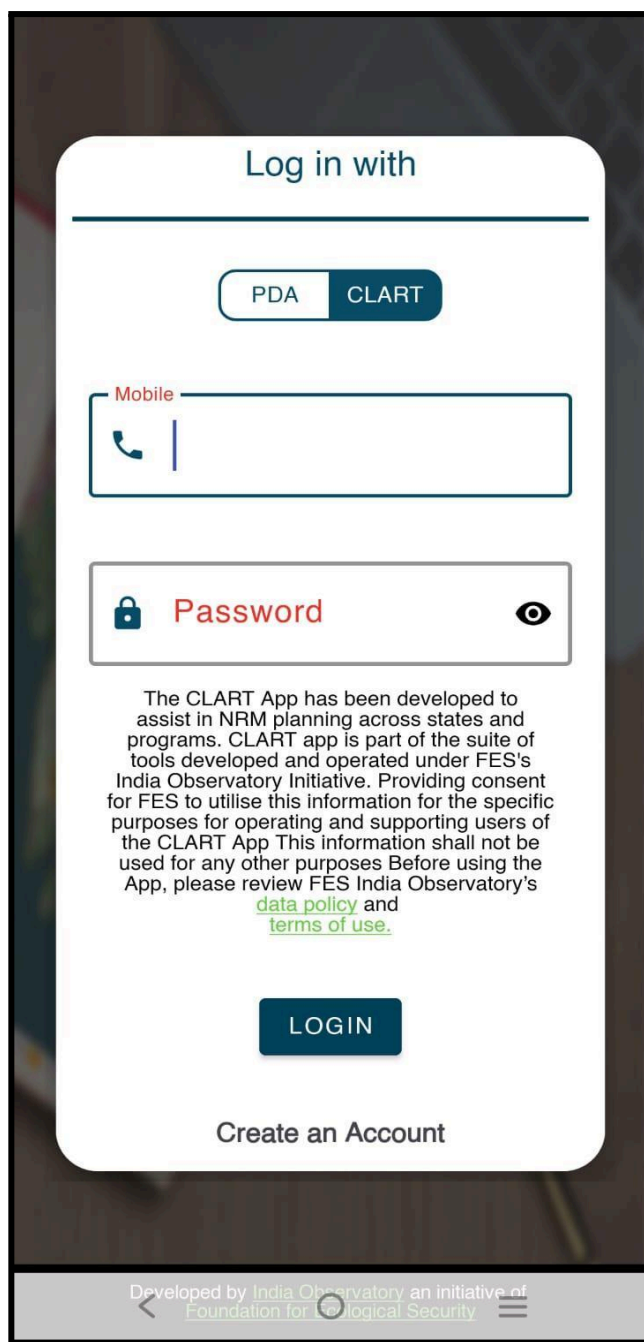
Password

LOGIN

Create an Account

The CLART App has been developed to assist in NRM planning across states and programs. CLART app is part of the suite of tools developed and operated under FES's India Observatory Initiative. This app uses credentials provided by the SOCION PDA platform. By using your PDA credentials to sign in to the CLART App, you are Authorising Socion PDA platform to share your name, email address, phone, program preference, and profile picture with CLART app and services. Providing consent for FES to utilise this information for the specific purposes for operating and supporting users of the CLART App This information shall not be used for any other purposes , Before using the App, please review FES India Observatory's [data policy](#) and [terms of use](#).

Developed by India Observatory an initiative of Foundation for Ecological Security



The right screenshot shows the login screen with the 'PDA' toggle selected. It features a 'Mobile' input field with a phone icon, a 'Password' field with a lock icon and an eye toggle, a 'LOGIN' button, and a 'Create an Account' link at the bottom. A detailed disclaimer paragraph is present below the password field.

Log in with

PDA CLART

Mobile

Password

LOGIN

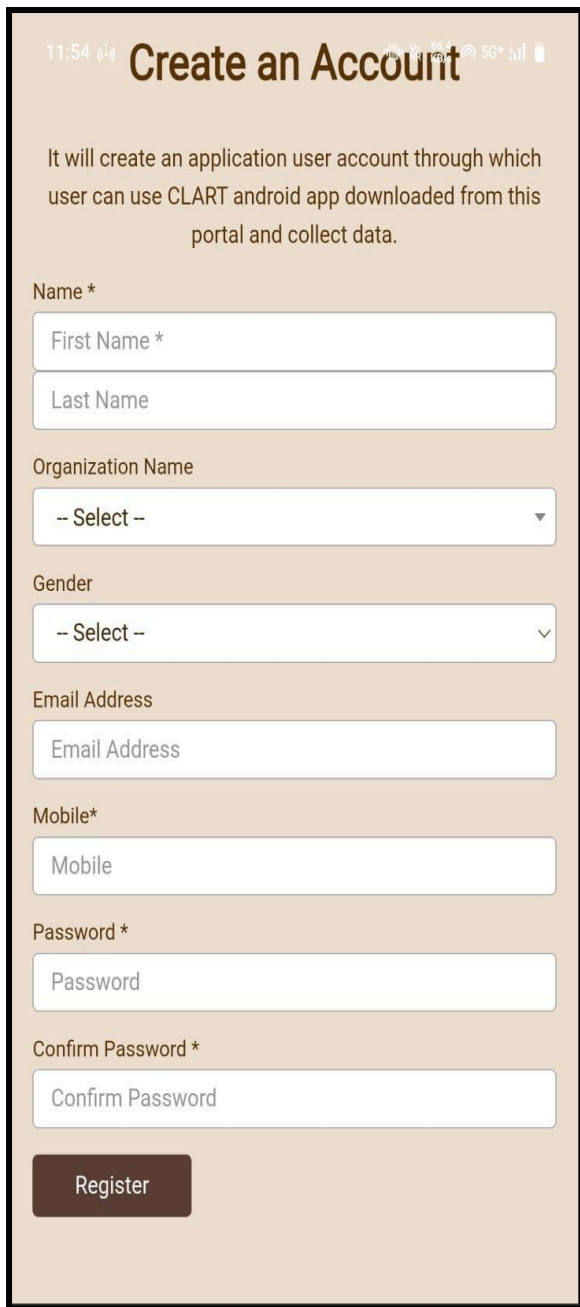
Create an Account

The CLART App has been developed to assist in NRM planning across states and programs. CLART app is part of the suite of tools developed and operated under FES's India Observatory Initiative. Providing consent for FES to utilise this information for the specific purposes for operating and supporting users of the CLART App This information shall not be used for any other purposes Before using the App, please review FES India Observatory's [data policy](#) and [terms of use](#).

Developed by India Observatory an initiative of Foundation for Ecological Security

Select the CLART from the toggle button and then click on the **Create an Account** option to Register yourself as a User of the App.

Upon doing so the following Questionnaire would be shown:



If the registration was successful
then the following message would be
displayed:

Fill all the necessary information listed below:

- First Name
- Last Name
- Name of the affiliated
Organisation
- Gender
- Email Id.
- Mobile number
- Password

After filling all these details click on the **Register** button.

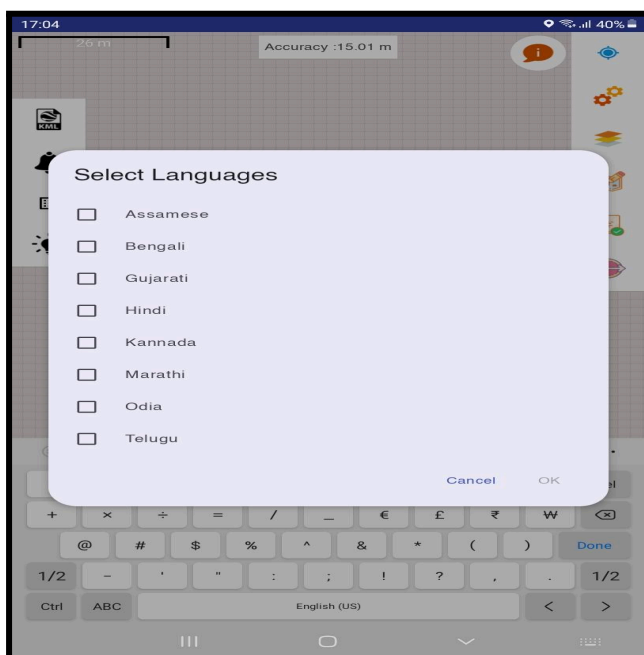
This will redirect you to the LOGIN page, simply input your Mobile No. & Password then click on **LOGIN**.

Note:

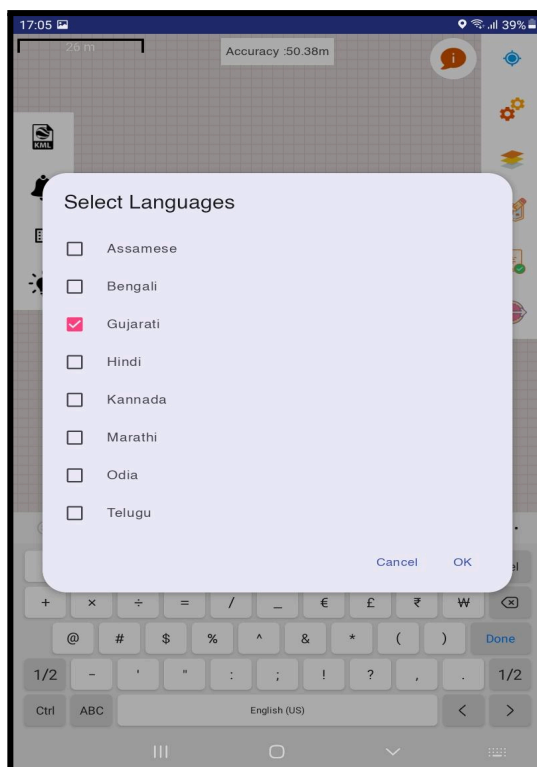
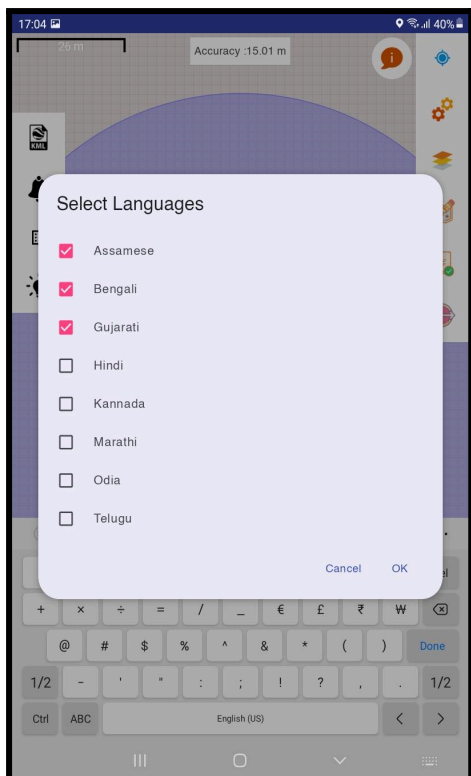
Fields mentioned with an asterisk (*)
Are necessarily to be filled.



When the user opens the dashboard screen for the first time, a "Choose Language" modal is displayed. The user can select up to three languages.

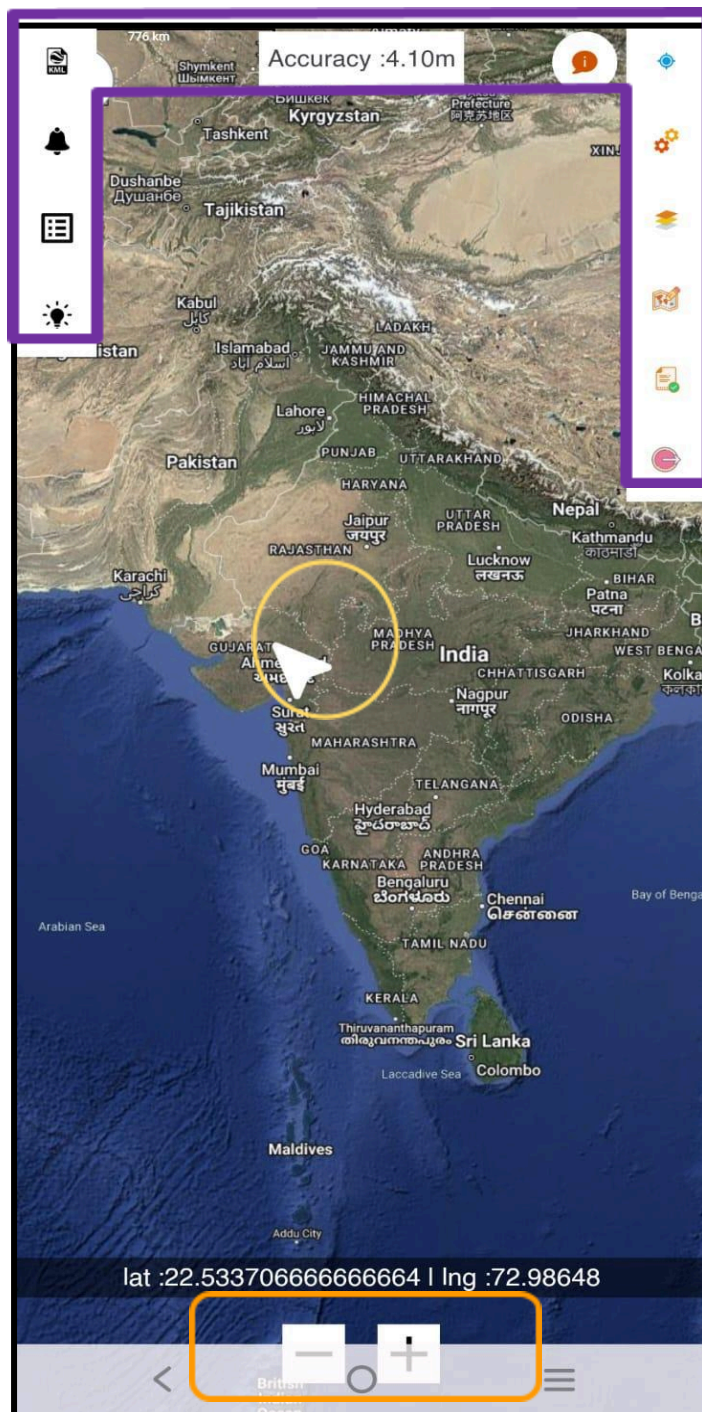


The selected languages will be saved and displayed under the "Select Language" option in the Settings screen.



2.4 App Navigation:

As shown in the given picture the area enclosed by the following colour code represent the corresponding things:



This is the App's Main Overlay.

It displays all the features that the user can access in the app.

This Cursor icon displays the real-time location of the User's device.

Given that the GPS is Enabled.

This displays the Latitudinal and Longitudinal coordinates of the Device location.

Given that the GPS is Enabled.

3. App's Functionalities:

The following section features all the apps functionalities as listed below:

- Map Legend
- Enable/Disable GPS
- Settings Menu -> Change Language
 - >Download MBTile
 - >Dashboard
 - >Current App Version Details
 - >FAQ's (Offline Chatbot)
- Applying the MBTile layer.
- Data Collection
- Saved Forms
- Viewing KML Files
- Creating your own Polygon/Polyline
- Synced Forms
- In App Walkthrough.

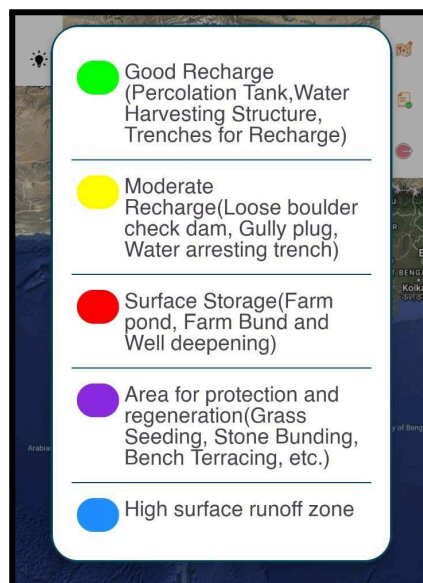
3.1 Map Legend:

This displays the legend or the colour-code for the user interactive map.

Note this colour-coding was done by collecting and mapping data all across India.

This can be accessed from the  icon.

Upon clicking on the icon, the following would be displayed:



3.2 Enable/Disable GPS:

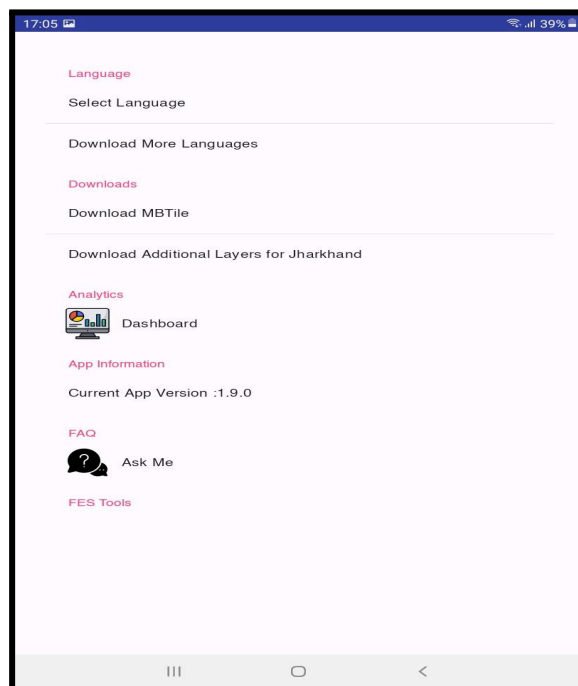
This feature allows the user to either enable or disable the GPS by one simple click of a button that too inside the App, making the process hassle free and easy.

This can be done using the  icon.

Simply click on the icon to enable or disable the GPS on your device.

3.3 Setting Menu:

This menu can be accessed by clicking on the  icon. By clicking on the icon, the following would be displayed:



This shows the Settings Menu of the app. It shows the following accessibilities:

- Change Language
- Download more languages
- Download MBTile
- Dashboard
- Current App Version Details
- FAQ's (Offline Chatbot)

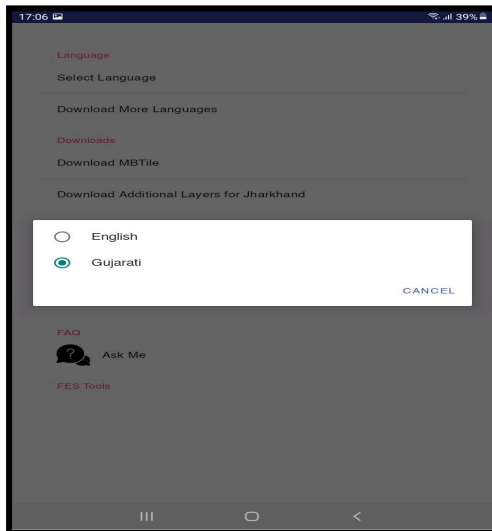
The following sections will detail each of the accessibilities.

3.3.1 Change Language:

Click on the **Select Language** option under the Language tab of the settings menu.

Select the language form the following options:

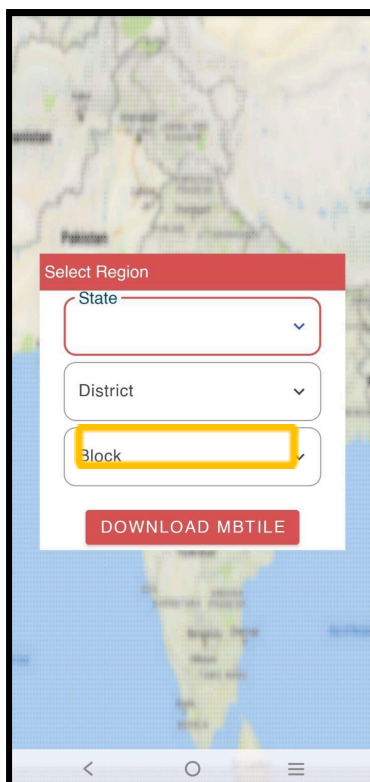
When the user taps "Download More Languages," the same "Choose Language" popup displayed during the initial login is opened. The user can select one or more additional languages to download.



3.3.2 Download MBTile:

Click on the **Download MBTile** option in the setting menu.

The following Questionnaire would be displayed:



Input the required details in the given order:

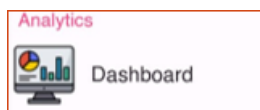
- Name of the State
- Name of the District
- Name of the Block

After doing so click on the **DOWNLOAD MBTILE** Button as highlighted in the image.

3.3.3 Dashboard:

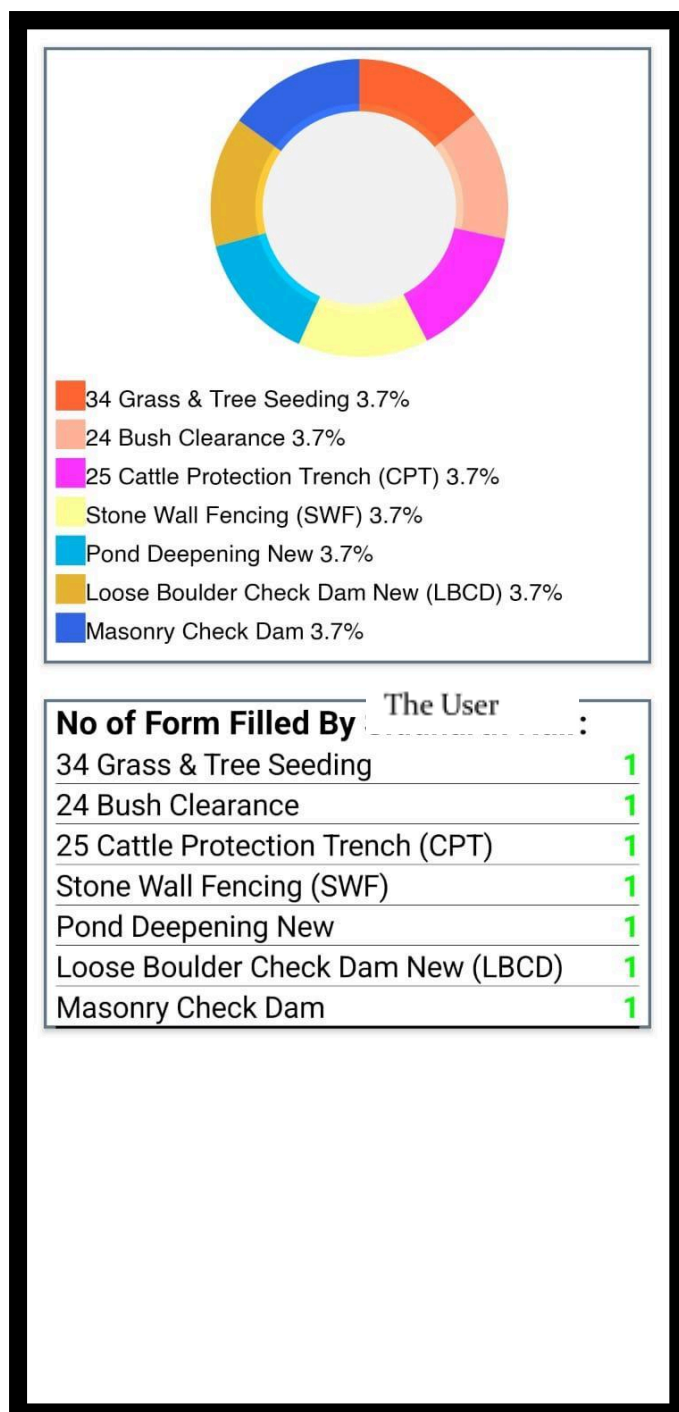
This section will display the dashboard of the app as shown in the example below:

This can be accessed by clicking the



icon in the setting menu.

By clicking the icon, the following would be displayed:



It consists of a pie-chart with colour coded data of the type and structure for which the form was filled.

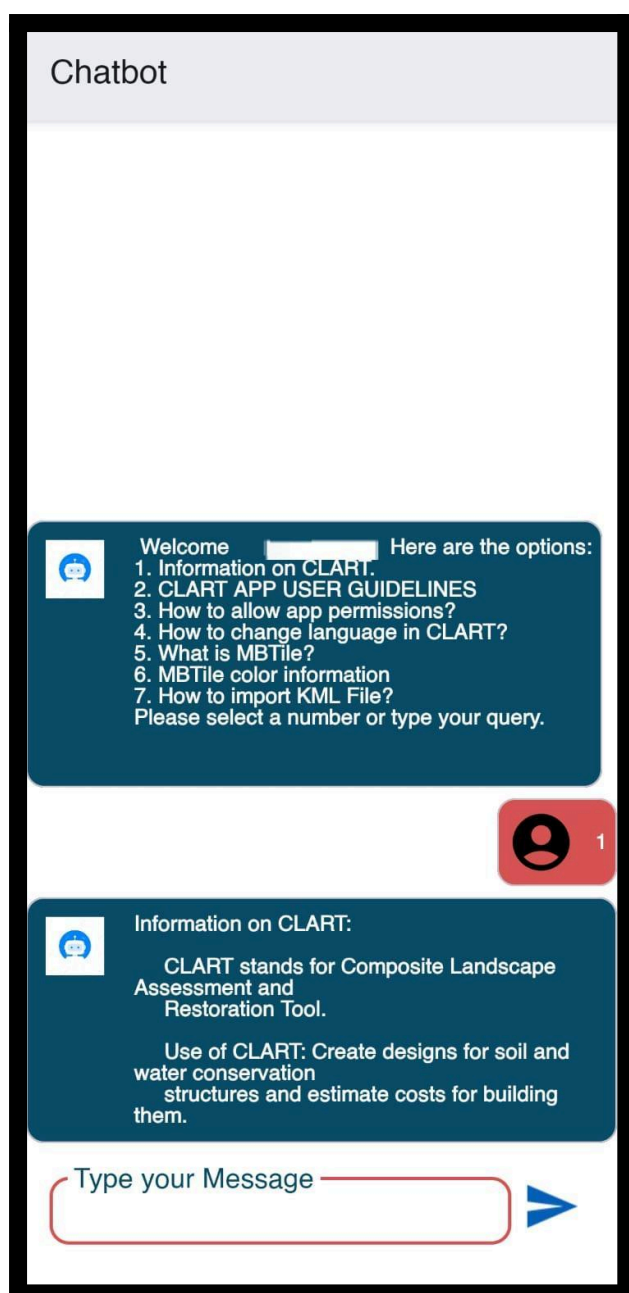
It also displays the number of forms filled by the user in a list format, taking into consideration the structure for which the form was filled.

3.3.4 FAQ's (Offline Chatbot)

The app features an offline chatbot with pre-programmed responses based on the user's Query. This can be accessed by using the following option:



Upon clicking on this option then the following chat box would appear:



The chatbot will display the list of queries that it can provide an answer to. Simply input the number corresponding to your query as shown in the picture, the chatbot will then answer your query based on your input.

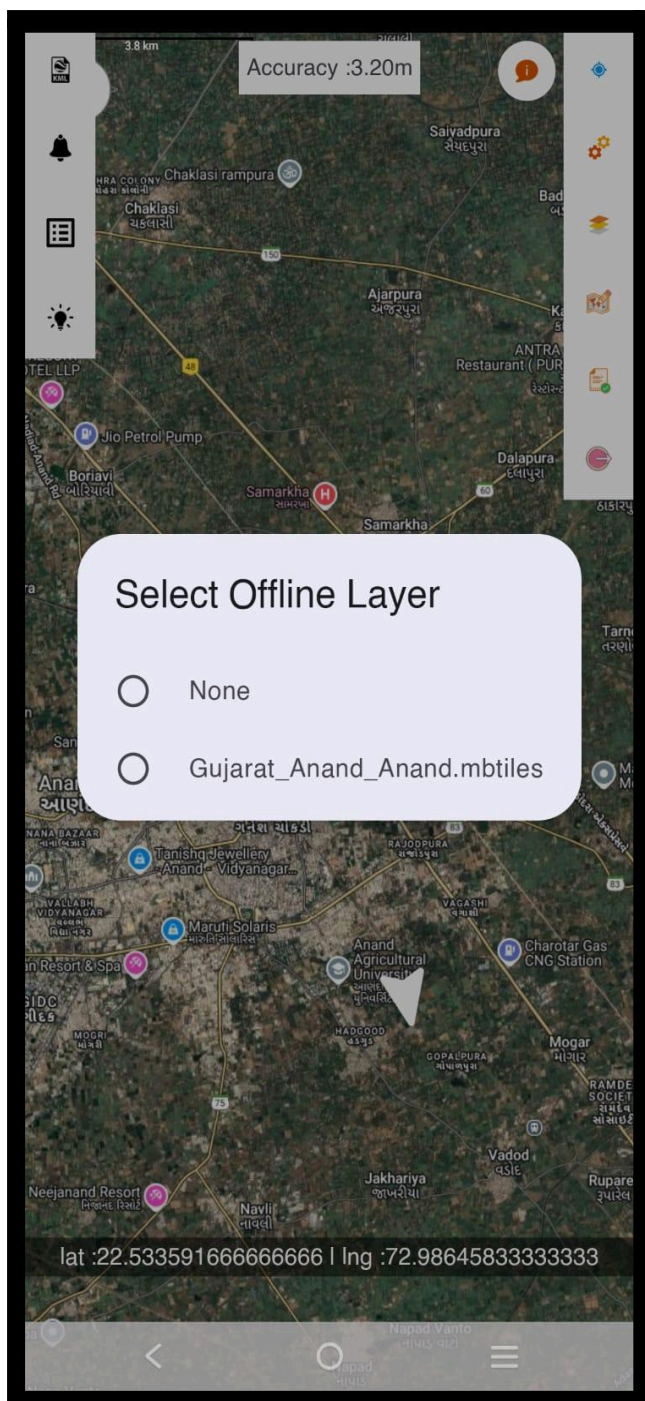
4. Applying the MBTile



Layer:

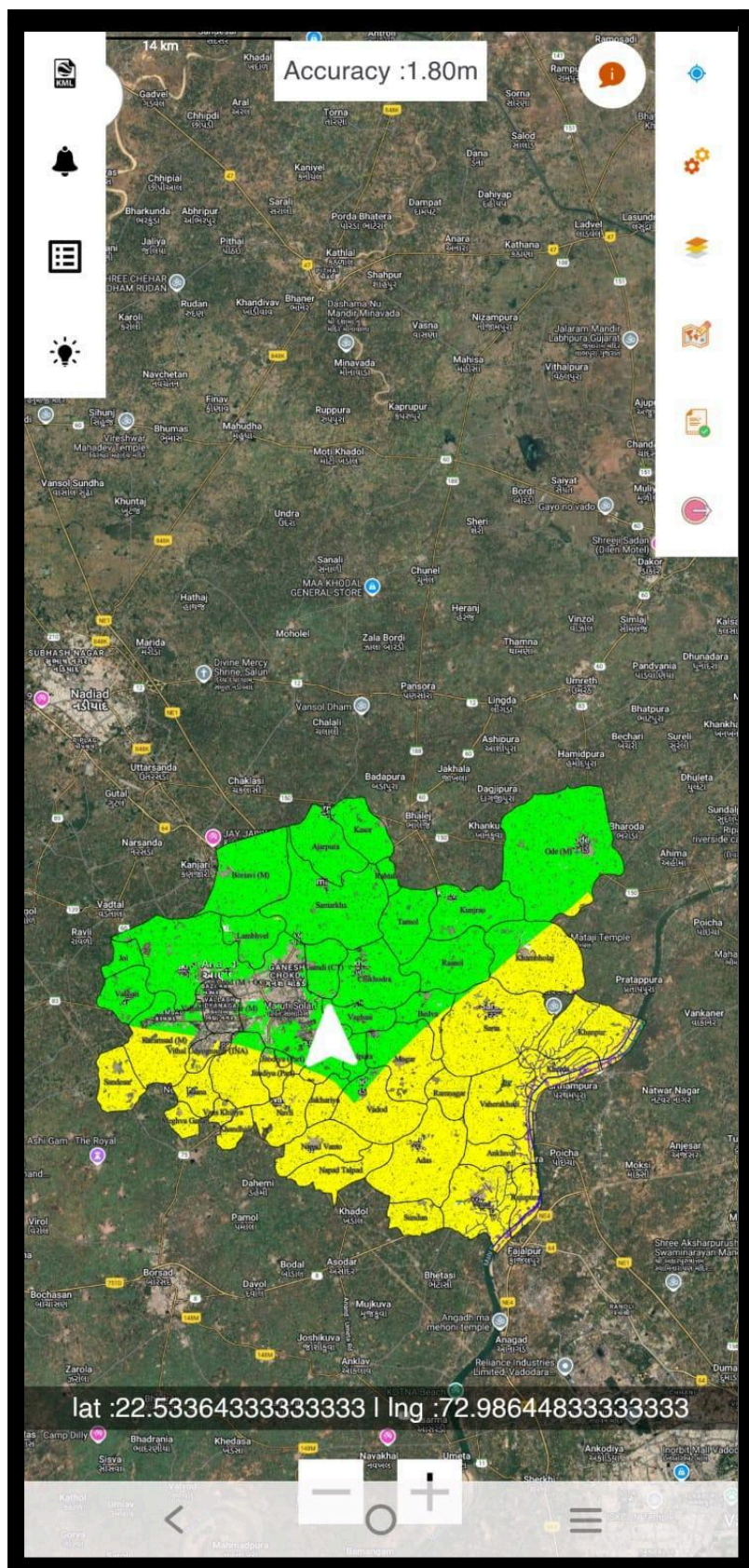
To view the MBTile layer on the User Interactive map, click on the icon.

After clicking the icon, the following pop-up box would appear:



Based on the MBTile Offline Files present in the device the pop-up would display the corresponding options to select them.

Click on the required MBTile file that you want to apply on the map and the pop-up box would disappear revealing an MBTile layer added to the map as shown in the following page.



As shown in the picture the MBTile Layer follows the colour-code mentioned previously in the Setting Menu section.

Note:

This is an important process as it is required to be done before collecting new data.

This would be discussed in the next section.

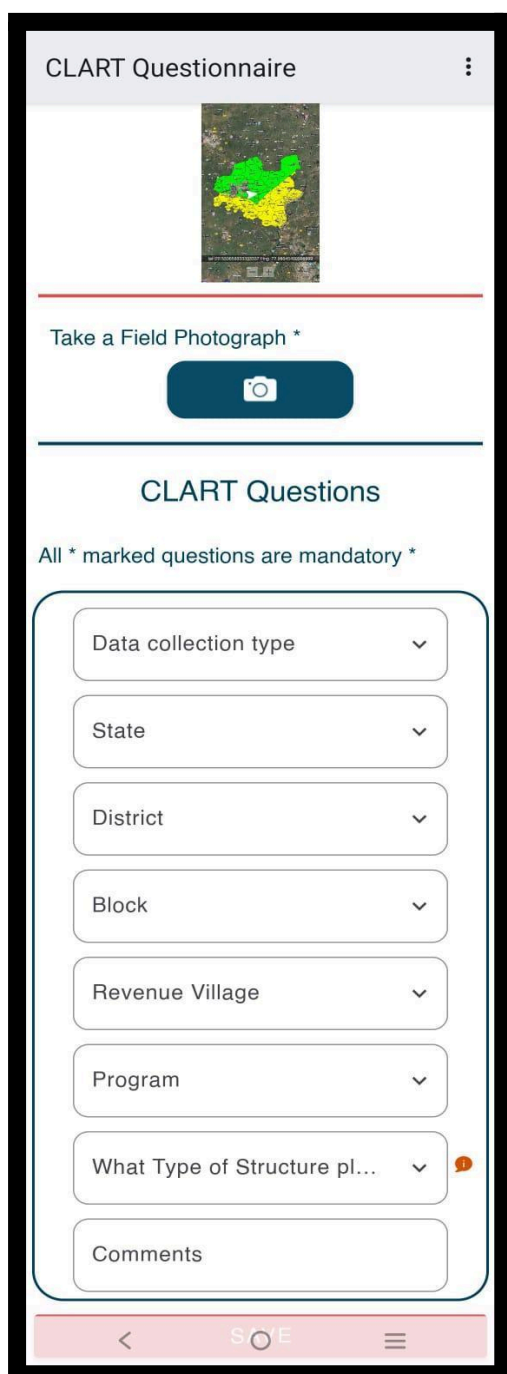
5. Data Collection:

Using this feature the user can input all the necessary data according to the field requirements via a Questionnaire

The app will generate a cost estimate for the structure that the user is interested in, the calculation will factor in things such as average labour cost and many other parameters to calculate this data

Each questionnaire would differ based on the User's selection. An example is given below:

Click on  the icon to begin the questionnaire.



The screenshot shows the 'CLART Questionnaire' screen. At the top, there's a header with the title and a menu icon. Below the header is a satellite map of a field area. Under the map is a section titled 'Take a Field Photograph *' with a camera icon button. Below this is a section titled 'CLART Questions' with a note: 'All * marked questions are mandatory *'. The questionnaire consists of several dropdown menus: 'Data collection type', 'State', 'District', 'Block', 'Revenue Village', 'Program', and 'What Type of Structure pl...'. The last dropdown has a red notification icon. At the bottom is a 'Comments' text input field. The app's navigation bar at the very bottom shows a back arrow, a home icon, and a menu icon.

Note:

This can only be done after applying an MBTile Layer.

Fill in the Questionnaire in a structured and Hierarchical manner and upload the image of the field.

Add comments if needed.

5.1 An Example:

An example for the Data Collection Questionnaire is given below:

The diagram illustrates the process of taking a field photograph during data collection. It shows two sequential screens of the CLART Android app.

Left Screen (CLART Questionnaire):

- Header: CLART Questionnaire
- Image: A small satellite map showing a green and yellow area.
- Action: "Take a Field Photograph *" with a camera icon button.
- Section: "CLART Questions"
- Note: "All * marked questions are mandatory *"
- Form Fields (all with dropdown arrows):
 - Data collection type
 - State
 - District
 - Block
 - Revenue Village
 - Program
 - What Type of Structure planned (with a red notification bubble)
 - Comments
- Bottom Bar: Navigation icons (back, home, menu) and a "S/O/E" label.

A blue arrow points from the "Take a Field Photograph *" button to the right screen.

Right Screen (CLART Questionnaire):

- Header: CLART Questionnaire
- Image: A larger satellite map showing a specific location.
- Action: "Take a Field Photograph *" with a camera icon button.
- Image Placeholder: A large black rectangle representing the field photograph.
- Section: "CLART Questions"
- Note: "All * marked questions are mandatory *"
- Form Fields (all with dropdown arrows):
 - Data collection type: Testing
 - State: Gujarat
 - District: Anand
 - Block: Anand
 - Revenue Village: Hadgood (CT)
 - Program: Default Test Program
 - What Type of Structure planned: 24 Bush Clearance (with a red notification bubble)
 - Comments: comment here
- Bottom Bar: A red "SAVE" button.

A green arrow points from the left screen to the right screen, indicating the flow of the process.

24 Bush Clearance

Work (Filled for each site)

Planning Year

Planning Year

2024-25

2025-26

2026-27

plot number *

Location Name of the Site *

Agency *

Purpose of structure *

Input sheet B- Filled in the field

Length of Bush Clearance in (met...

SAVE



24 Bush Clearance

56

Width of Bush Clearance in (meter)

56

Bush Clearance

Length in meter

56

Average width in meter

56

Total Quantity

3136

1.1 Cutting and Clearance of bushes and shrubs including disposal for dense coverage area

42

Total Quantity

1317.12

Labour rate

5

Total Labour Cost

6585.599999999999

Total Rate (Material + Labour)

5

Total Cost

6585.599999999999

1.2 Cutting and Clearance of bushes and shrubs including disposal for medium coverage area

14

Total Quantity

439.04

Labour rate

4

Total Labour Cost

1756.16

Total Rate (Material + Labour)

4

Total Cost

1756.16

Sub Total

Total Labour Cost

8341.76

Total Cost

8341.76

Add for Drinking Water and Palnewall @

2

Total Cost

166.83520000000001

Add for Contingency @

2.5

Total Cost

208.544

Grand Total Cost

8717.1392

Total Labour Cost

8341.76

Total Material Cost

375.37919999999994

Total Person Days Generated

24.32

Labour ratio in [%]

95.69377990430623

Material Ratio in [%]

4.3062200956937735

SAVE



24 Bush Clearance

2.5

Total Cost

208.544

Grand Total Cost

8717.1392

Gujarat_Anand_Anand_Hadgood_CT
_24_Bush_Clearance_2025_06_02_
12_20_35

OK

24.32

Labour ratio in [%]

95.69377990430623

Material Ratio in [%]

4.3062200956937735

SAVE

The pop-up box in the above picture confirms that the form has been submitted.

6. Saved Forms:

Saved forms can be viewed/deleted/submitted/Re-Submitted by clicking on the  icon.

The following would be displayed upon doing so:



Toggle to submit or re-submit the saved forms.

Select the saved form.

Click on this link to view synced data once you have submitted or re-submitted your form.

This will re-direct you to the CLART Portal.

It gives the user a platform to check the status of the submitted forms.

After selecting the forms, it can be viewed/deleted/submitted or resubmitted.

7. Import KML Files:

KML (Keyhole Markup Language) Files can be viewed from the device's storage by clicking on the  icon in the left Overlay. Note an MBTile Layer has to be applied first.

Simply select the KML File you want to view via the CLART app.

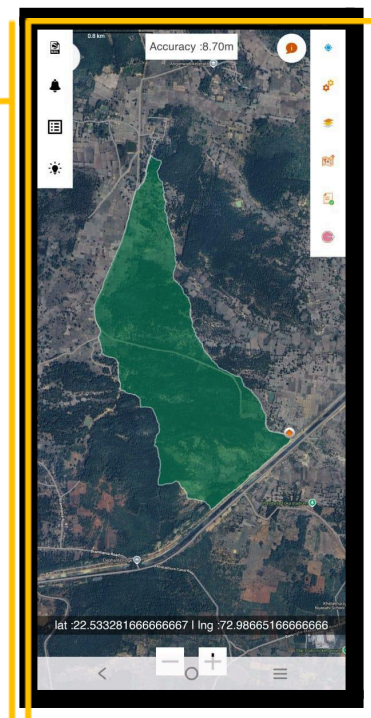
An example is given below:



As shown in this example  the icon will be displayed on the location where the KML File was mapped.

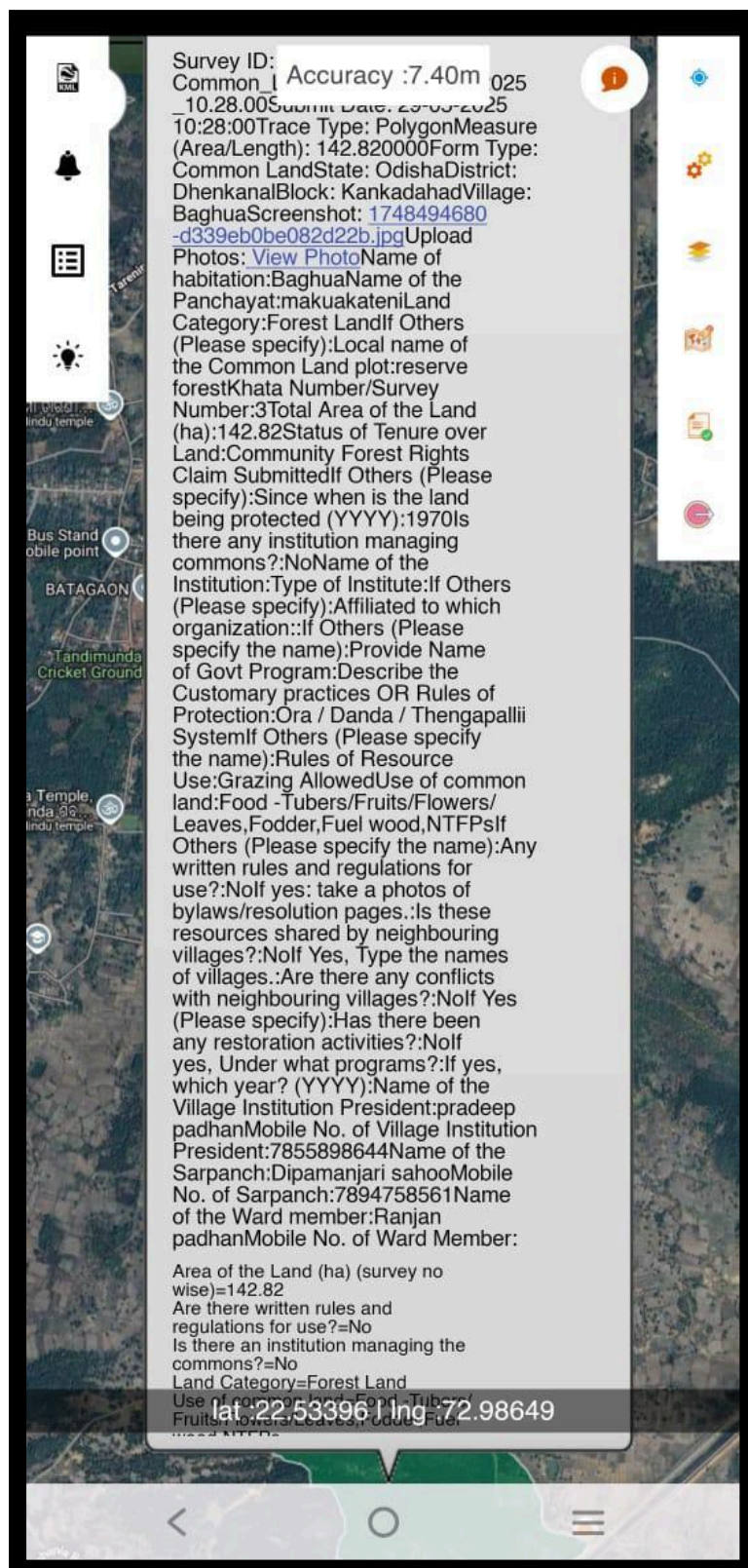
The User can view the same in GoogleMaps by  clicking on the icon.

The app will also display the details of the Location of the KML File if the user clicks on the polygon/polyline.



By clicking on the mapped region of the KML file a detailed summary of the region would be displayed in an overlay.

Example:



The screenshot of the filled form can be viewed from the given link.

A short description of the filled form is also displayed.

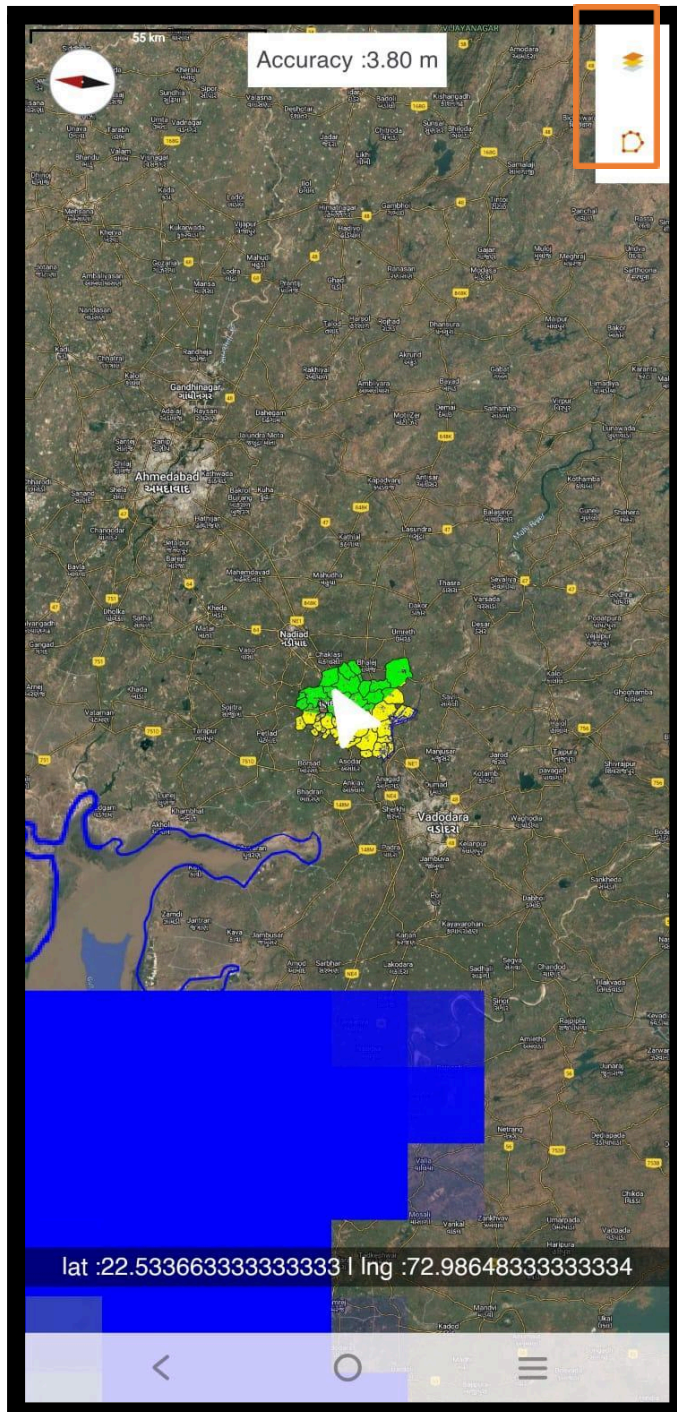
The user can also create a unique Polygon or Poly-line based on the requirements of the user.

This is explained in the next sections.

8. Creating a Polygon/Poly-line:

The user can create a Polygon or Poly-line. Firstly, open a KML file using the CLART app.

The following would be displayed:



Click on this icon to start the process of creating a polygon or polyline.



Click on this icon to upload an MBTile map.

Ensure that the accuracy is good and that the displayed location of the Device is true and precise.

Some ways to increase the precision of the GPS location of the device is discussed in the next section.

1. Enable High-Accuracy Mode

- Go to **Settings > Location > Location Services** and turn on **Google Location Accuracy**.

2. Use Wi-Fi & Mobile Data

- Keep **Wi-Fi and mobile data ON**, even if not connected, to help your phone estimate location better using nearby networks.

3. Calibrate Your Compass

- Open **Google Maps**.
- Tap the **blue dot** representing your location.
- Select **Calibrate compass** and move your phone in a figure-eight motion.

4. Check GPS Signal & Environment

- Go **outside** or move to an **open area** to get a stronger GPS signal.
- Avoid **underground parking, dense urban areas, or places with lots of obstacles**.

5. Update Location Services

- Keep your **operating system and apps updated** for the latest improvements.
- Clear location cache by restarting your phone or resetting location settings.

If nothing seems to work,

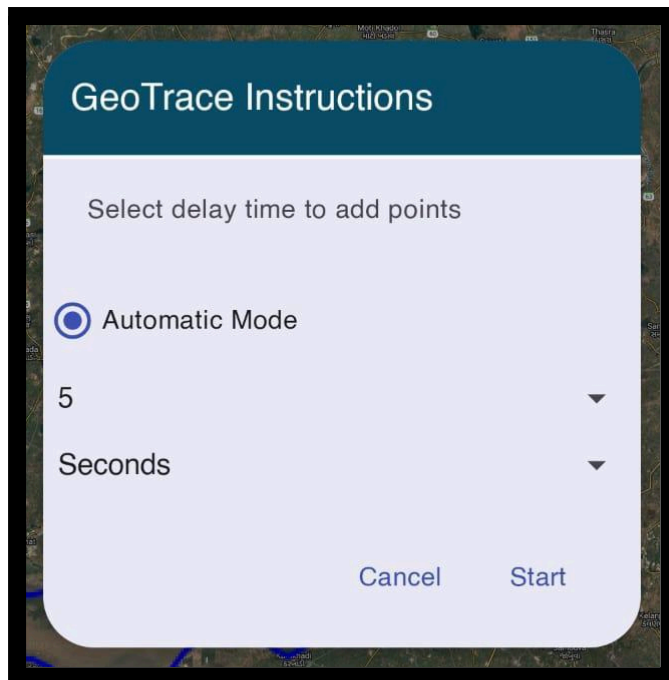
Start anew in another android device. It only takes a few minutes to set-up the CLART app.

Now to create a polygon or poly-line click on the



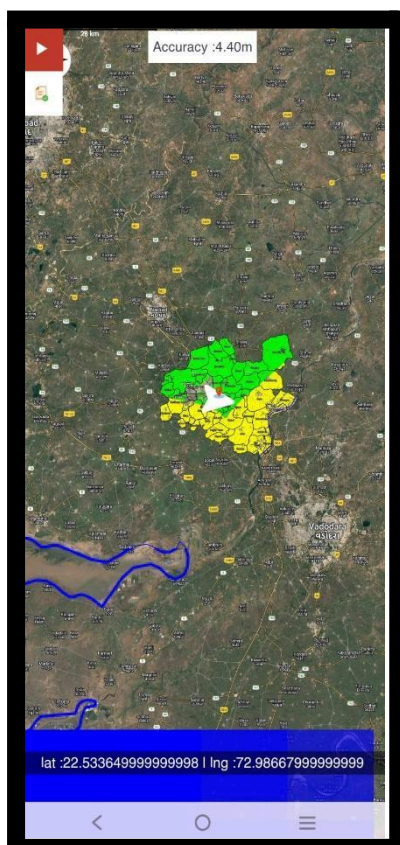
icon.

The following options would be displayed:



Select the time-period after which the location must be logged to create the polygon/polyline.

Then click on **START** to begin the process of creating the polygraph or polyline.



After creating a satisfactory polygon/line click on



icon, to save it and then fill in the data.

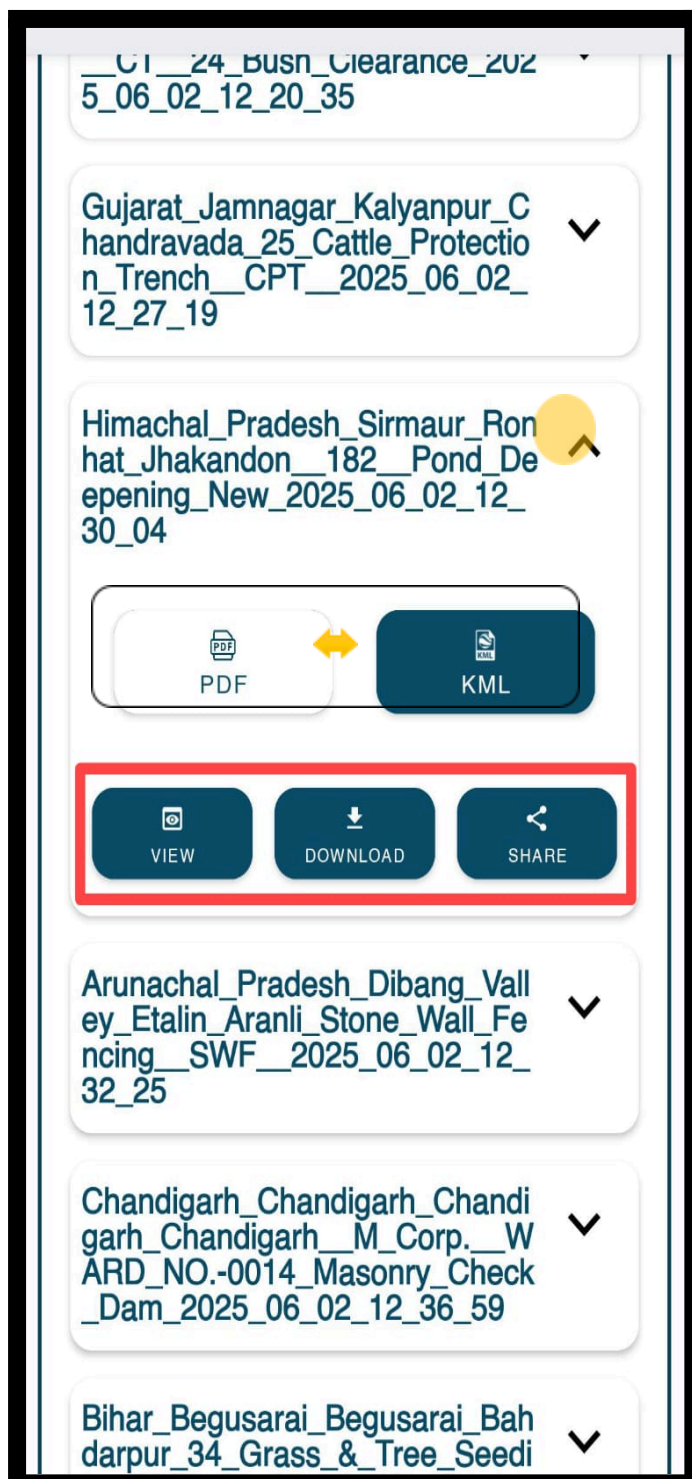


Select the appropriate option as per your requirement.

9. View/Download & Share:

The user can view/Download/Share the forms by clicking on the  icon.

Upon clicking on the icon, the following would be displayed:



Select the Form by clicking on the form's drop-down menu.

Select the format in which you need to perform the option.

Select the action that you need to perform:

- View
- Download
- Share

10. Hint

The App also features an In-App Walkthrough that can be accessed using the  icon.

11. CLART Portal:

The synced forms are saved in the CLART Portal that can be accessed from the following Link:

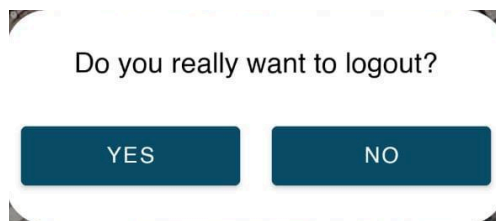
<https://det.indiaobservatory.org.in/>

This portal will allow the user to know about any updates based on the submitted form (Actual) including its status (Approved/Rejected) etc.

12. LOG OUT

To Log-Out from the CLART Application:

- Open the CLART Application
- Click on the  icon.
- The following would be displayed:



- Click on **YES**.

Upon doing so, the Login page of the App would be displayed indicating a successful log-out.



FOUNDATION FOR ECOLOGICAL SECURITY

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