

Grassland Cover Estimator App (*Android*)

Version 1.0.21.0

Guide on App

Open App

- Open to start Grassland Cover Estimator by tapping the following icon:



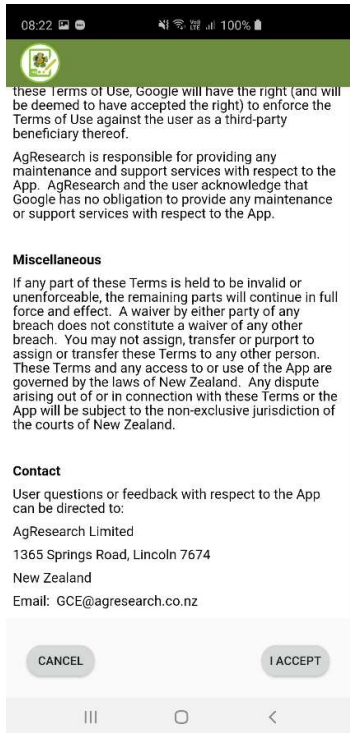
Start Up

- Splash screen may be displayed on start up:

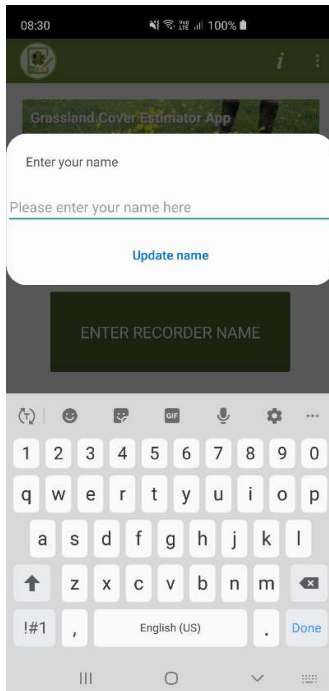


First Time Use

- Terms Of Use will be displayed for user to Accept or Cancel:

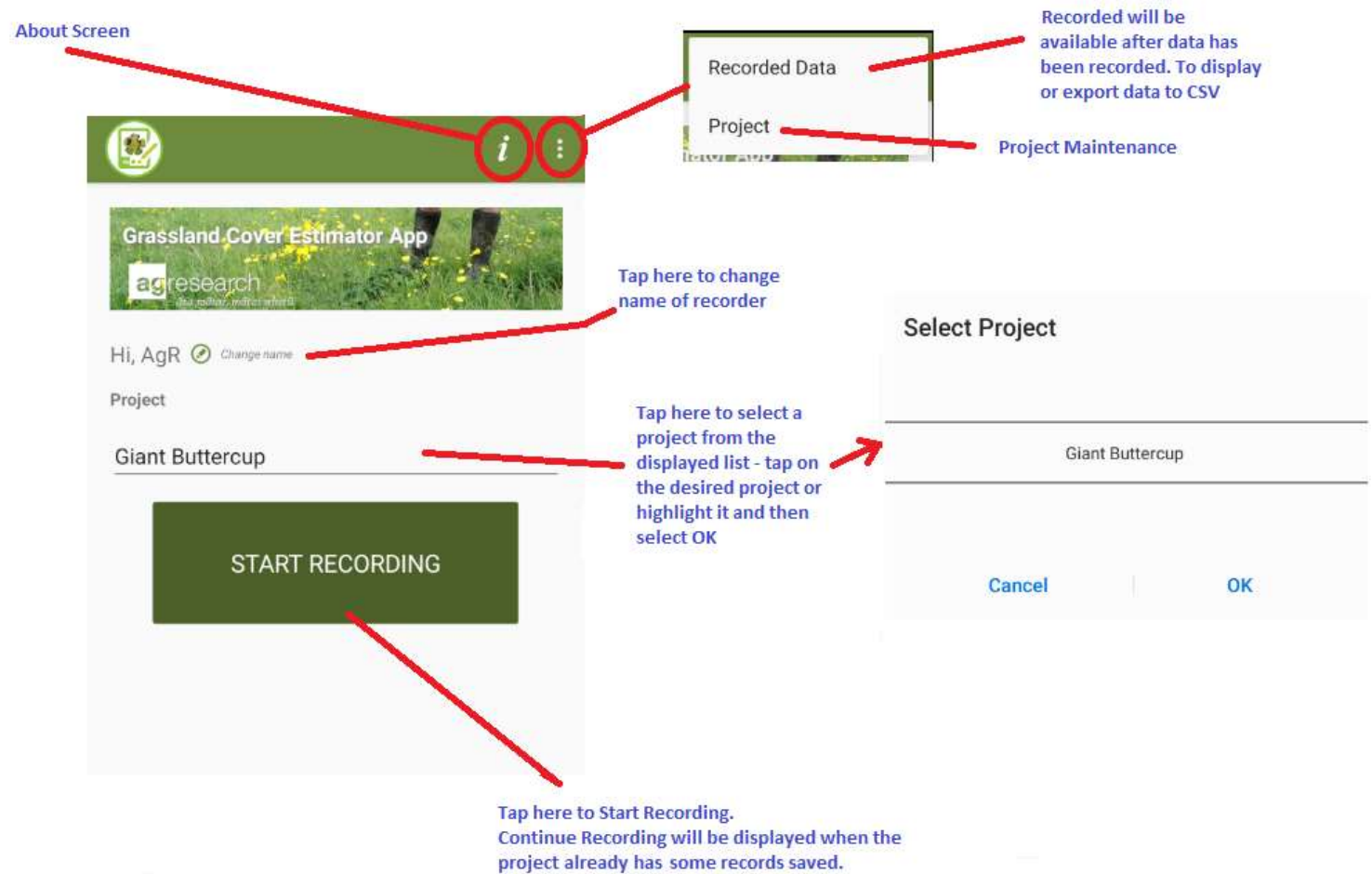


- User needs to enter their name (can be updated later):



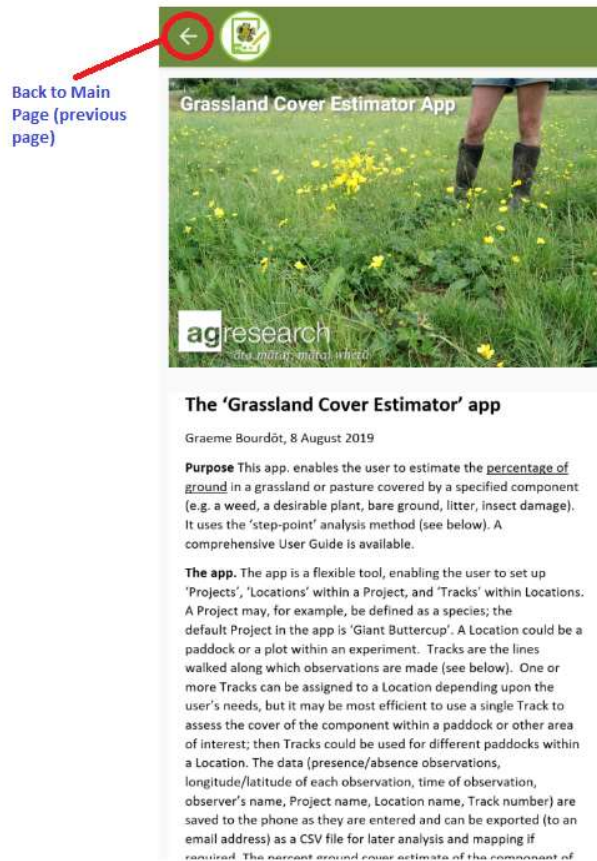
Main Page

- The Main Page will be displayed after splash screen and the following picture explains its functionality:



About Page

- On the Main Page, tap **About** on the top ribbon. The following will be displayed:

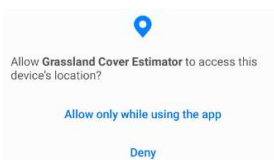


Recording Data

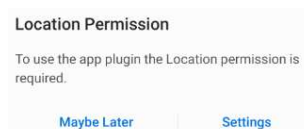
- Tap Start Recording after Project has been selected:

Allow Permissions

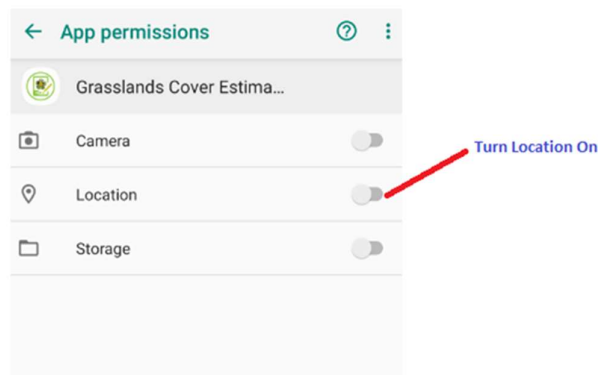
- At the first run of the installation, consent for device's location will be asked as follows:



- Tap **Allow** or **Allow only while using the app** to give permission, otherwise this app won't work as intended.
- When **Don't Allow** or **Deny** is chosen:
 - The app will notify user that the Location permission is required. It will ask user to choose the following:



- If **Maybe Later** were chosen, the app will ask for permission again when the user comes back to the Recording Data page or when Location icon has been turned on. It will keep doing that until While Using the App is chosen. (Users need to do a manual setting, see next step)
- If Settings were chosen, the Settings screen will be displayed. Find Location Services, choose Grassland Cover Estimator and turn on Allow Location Access to While Using the App on App permissions screen below:



- Users can still give permission manually to the app from Settings outside the app as example above.
- By default, the user will still be allowed to record data, however, GPS location coordinates will not be recorded. The following alert message will be displayed:



Recording Page

Annotations:

- Back to previous screen or exit without last page being saved
- Swipe On/Off
- Record Location On/Off
- Sound On/Off (Vibration)
- Finish Recording. All data have been saved
- Show/Hide Project Header
- Location Plot from previous location
- Enter Location Name
- Coordinate Search current location
- Search GPS location by device
- Choose Location Name from previous location name on same project
- Track Number # Type location name
- 0
- Tap here on how Track Number is implemented
- Tap + to increase Track #
- Tap - to increase Track #
- Description depending on Swipe On or Off
- Tap Absent or Present Image to record
- Tap here for Present when Swipe mode is Off
- Running total of the number of Presents recorded
- Record Location icon is off: Blank will be applied
- Record Location icon is on: When Location Coordinate is tapped and GPS location successfully retrieved, the location coordinate will be automatically populated with GPS location, i.e. 43°38'34".808 S 172°28'17".847E
- Enter Track # manually
- Tap here for Absent when Swipe mode is Off
- Running total of the number of Absents recorded
- This location coordinate will only be displayed when GPS is ON. Tap on it will display current location on device Maps app
- Swipe here when Swipe Mode ON
Left = Absent
Right = Present

Icon Status Legend:

- Swipe Mode ON
- Swipe Mode OFF
- Record Location ON
- Record Location OFF
- Sound/Vibration ON
- Sound/Vibration OFF
- Show Project Header
- Hide Project Header
- Finish Recording (Data Saved)

Map Mode: Street or Satellite or Hybrid

Project Summary:

Project Name : Giant Buttercup
 Number of Recorded : 2

Total No	Total Yes	Total Coverage
1	1	50%

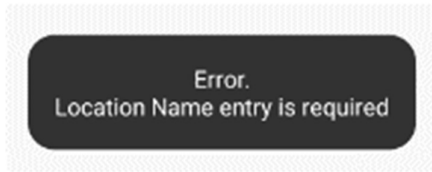
Track No	Track Yes	Track Coverage
1	1	50%

Equation:

$$\% \text{ cover of } Y \text{ in Area} = \left(\frac{\# \text{ Points where } Y \text{ is Present}}{\text{Total \# Points}} \right) \times 100$$

Validation

- To be able to record data (either by swiping Left/Right or tapping Absent/Present Image), Location Name is required. The following alert message will be displayed at bottom of screen otherwise:

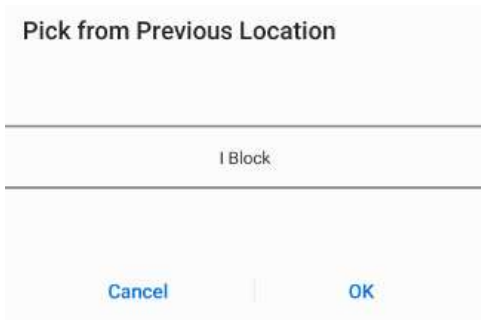


- Track Number # is a whole number greater than 0. The following alert message will be displayed at bottom of screen otherwise:

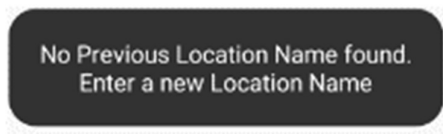


Pick from Previous Location

When Location name is tapped then a list will be displayed to allow user to select from previous locations that have been recorded and still exist on the system.



If no data, then the following will be displayed:

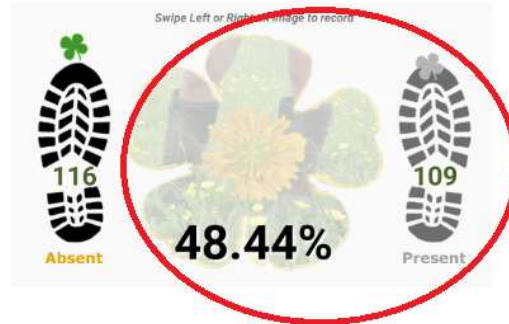


- UI feedback on user experience during data recording when app still processing:
 - On Swipe left/right. Default image will have some opacity while the boot image will be changed to grey colour accordingly as follow:



Swipe Left

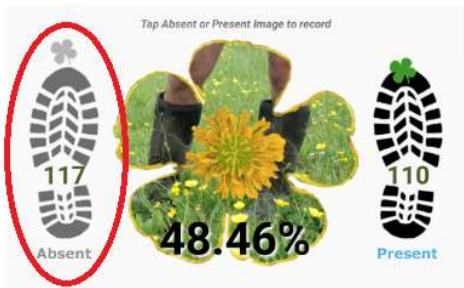
Image and Left Boot will be opaque and grey when app still recording



Swipe Right

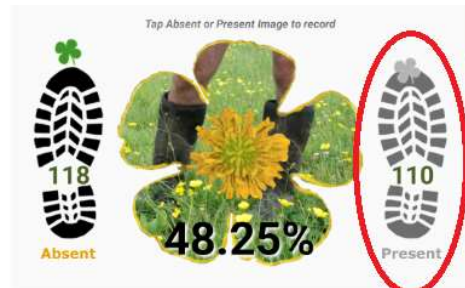
Image and Right Boot will be opaque and grey when app still recording

- On Tap left/right. Boot image will change to grey colour:



Tap Left

Left Boot changed to grey



Tap Right

Right Boot changed to grey

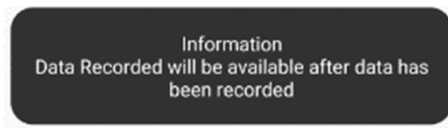
Export Data

Tap on three dots then tap Exported Data



Export Data Page Access

- To access, tap Recorded on Main Page
- When no data is available, the following will be displayed:



Data Recorded Page

Information
Giant Buttercup : 4 record(s)
OK

Information on Project Record that can be exported

Export Data to CSV

Exported Data

List of record(s) that have been Exported to CSV

Sort Record Date Ascending/Descending Group by project & location

Sort Observed Ascending/Descending Group by project & location

Group Header gives Project, Location Name, Track # and Coverage Percentage Area

Date Time Recorded

Absent/Present

Observer Name

To Edit Absent/Present only Select and Tap a record

Show/Hide Project Header

To Save and Exit if Observe has been switched, i.e. On to Off or Off to On

Cancel/Back to previous screen

To Delete long tap on selected record until the following DELETE screen has been displayed

To Cancel, tap the back button

Tap Delete to remove selected record

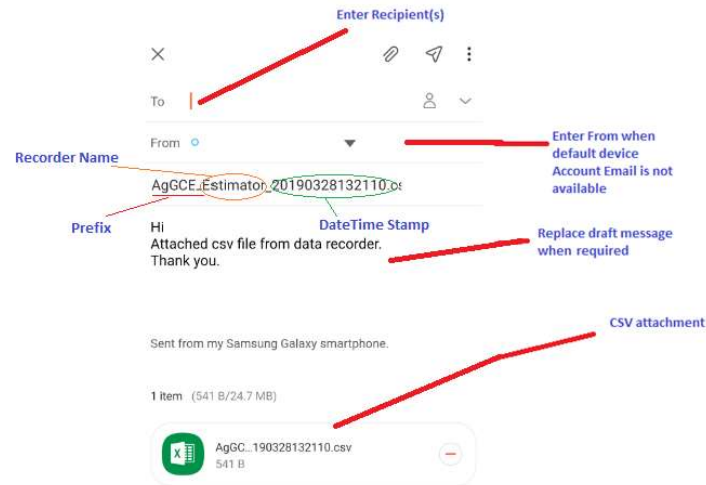
Switch to change Observe ON/OFF
Absent = OFF
Present = ON

The screenshots show a list of records with columns for 'RECORD DATE' and 'OBSERVED'. A 'DELETE' screen is shown below the list. A detailed view of a record shows a 'Track Number #' of 1 and a '100%' coverage percentage. At the bottom of this view is a switch labeled 'Observe' which is currently turned 'ON'.

- When Export Data to CSV is tapped, the app will execute an Email app depending on user device

Email Mode

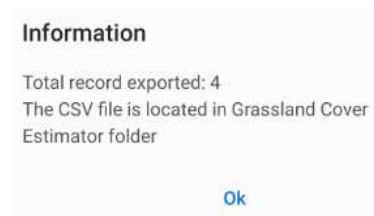
- Example email as follows:



- After email has been sent or discarded, the process will return to the Grassland Cover Estimator App
- If email is cancelled user will need to manually compose an email to send the csv file(s)

Finish Export Data

- When the exporting process has finished the following will be displayed:



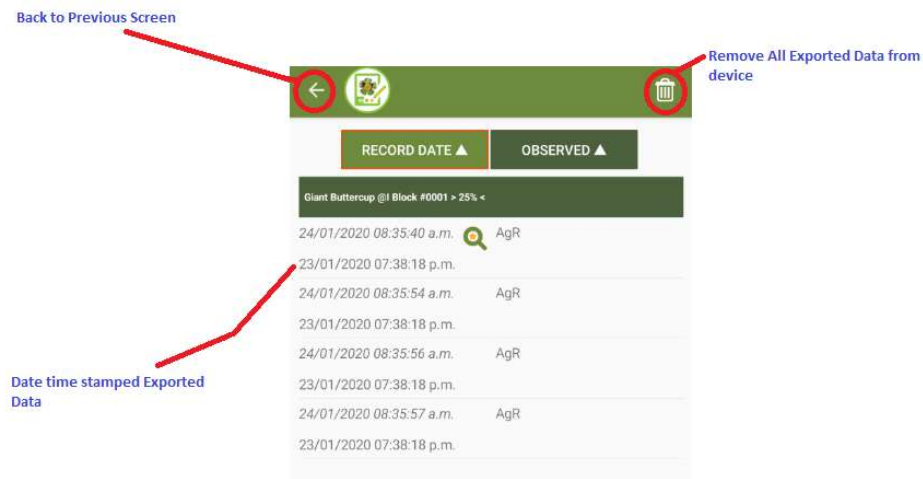
- All records that have been exported will be removed to Exported Data page

CSV File

- Filename will have prefix **AgGCE_** followed by recorder name then by datetime of yyyyMMddHHmmss (Year Month Date Hour Minute Seconds), i.e.
AgGCE_Estimator_20190423090154.csv
- If SD Card is available on device, file(s) can be found on SD Card → Android → Data → nz.co.agresearch.grasslandcoverestimator → files → exporteddata folder
- If no SD Card is available, file(s) can be found on internal storage, i.e. Internal Storage → Android → Data → nz.co.agresearch.grasslandcoverestimator → files → exporteddata folder
- Use My Files/File Explorer app or equivalent with it to browse CSV file(s)

Exported Data Access

- To access as previous picture, select the Exported Data (secondary menu), as following example:



- Note:
 - When all exported data has been removed from the device, the Pick Location will not be available to pick on Recording Data page anymore. User will need to re-enter Location Name and Location Coordinate again.
 - Cover Estimate Calculation will not include data from Exported Data

Project

By default one project will be populated for the Grassland Cover Estimator app, the Giant Buttercup project, with default image:

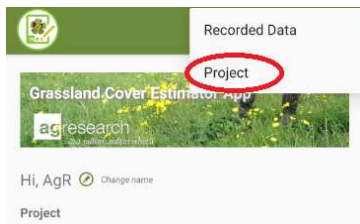


This default project can be deleted as long as no active record is attached to it.

User can also add a new project in case user would like to use this app other than Giant Buttercup.

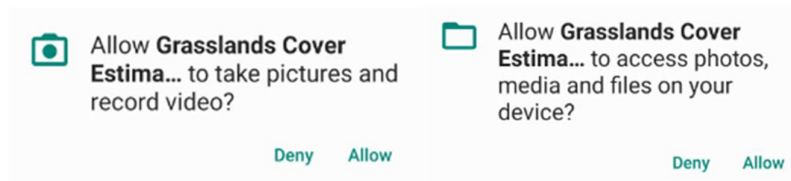
Project Page Access

- To access, tap *Project* on Main Page

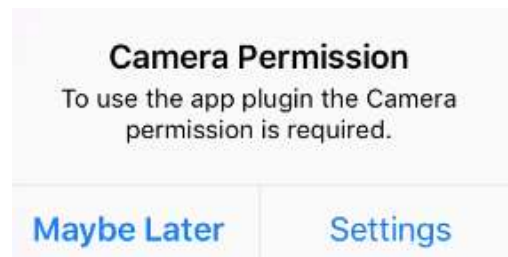
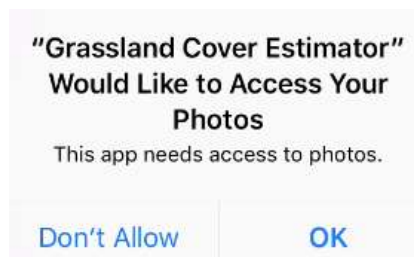


Allow Permissions

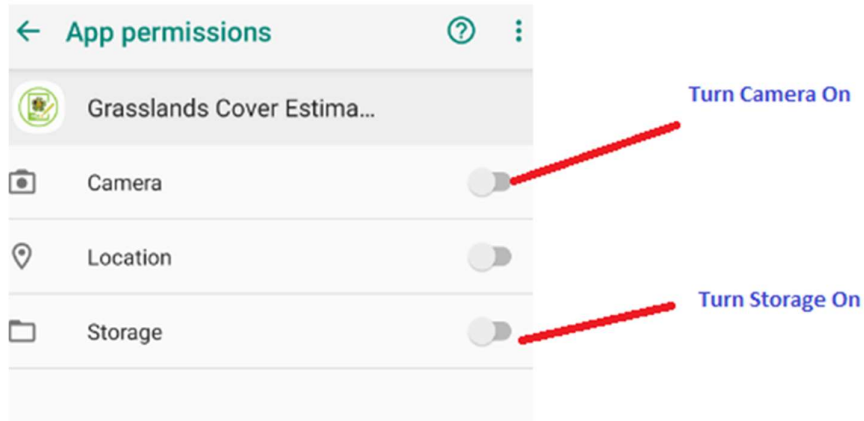
- At first run of installation, consent to access photos, media and files as well as to access camera on device will be asked as follow:



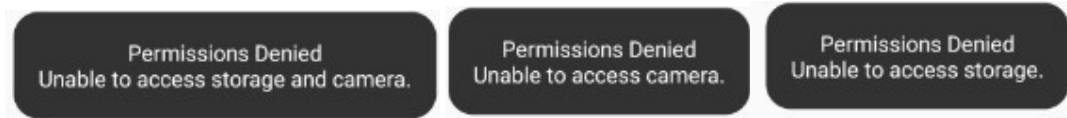
- Tap Allow to give permission, otherwise this app won't work as intended
- When **Deny** is chosen:
 - The app will notify user that the Storage/Camera permission is/are required. It will ask user to choose the following:



- If **Maybe Latter** were chosen. The app will ask for permission again when the user comes back to the Recording Data page. It will keep doing that until User manually turn the Storage/Camera Setting On (from Device Settings)
- If **Settings** were chosen.
 - For Camera permission, turn it on as on picture
 - For Storage permission, turn it on picture



- To be able to take picture by device camera, Allow consent is required for Camera and Storage permission. The following alert message will be displayed otherwise:



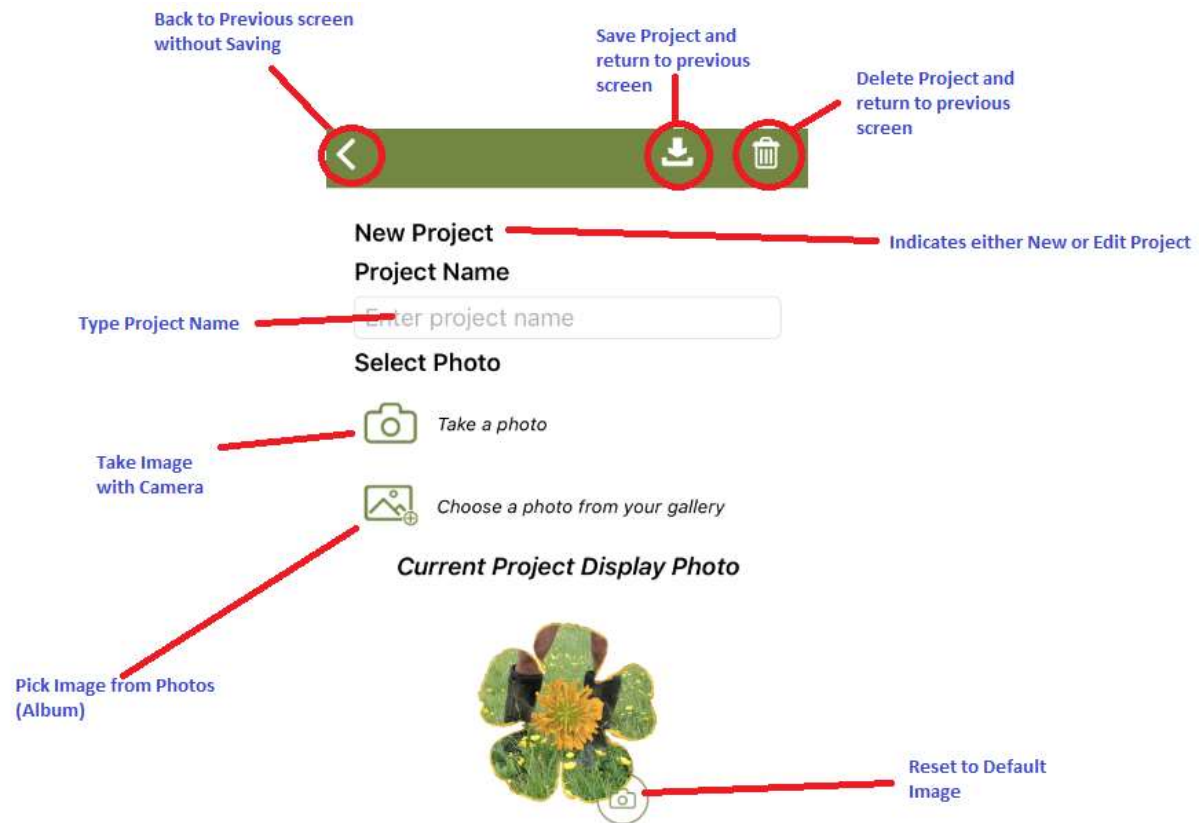
Project List Page

- After tapping Project on secondary menu, Project List Page will be displayed:



Add New Project

- Tap + to add new project, the following will be displayed:

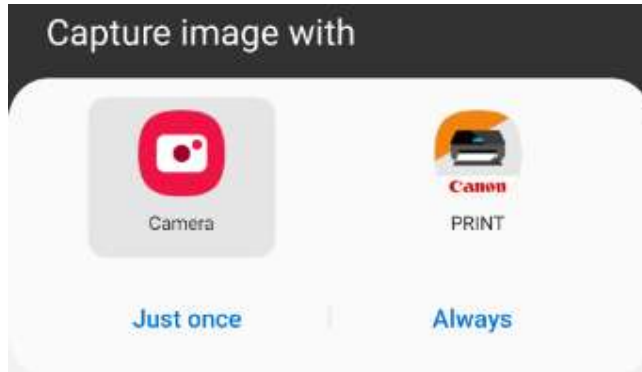


Validation

- Duplicate Project is not allowed
- Project can't be deleted if there is any data related to it still existing as either data recorded or exported or if it is the default Project (Giant Buttercup)

Take Project Image by Camera

- Tapping on Camera icon on Take a Photo will bring up camera
- If default is not setup and/or more than one app to capture image, the following will be displayed: (Tap on Camera or make it default/always to it)



- Take picture with camera as default device settings
- After photo has been taken, Preview Image will be displayed. Tap **OK** to accept Photo or **Retry** to take another shot



- Project Image location will be populated
- Image will be stored in **Grassland Cover Estimator Photo** album on Gallery

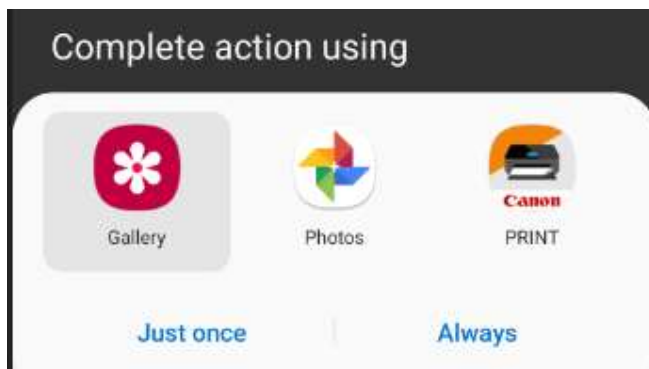


Select Image from Photos/Album

- Tap on Gallery Image to choose a photo from your **Grassland Cover Estimator Photo** album on gallery will bring up Photos/Album on your Android device as follows:



- Select Photo that you wish to use then tap it.
- Project Image location will be populated based on the location of Photo selected
- If default is not setup and/or more than one app to complete action, the following will be displayed: *(This example will use Gallery)*



Save Project

- After adding new Project Name and populating Project Image Location (either by camera/gallery or manual input) as example below:

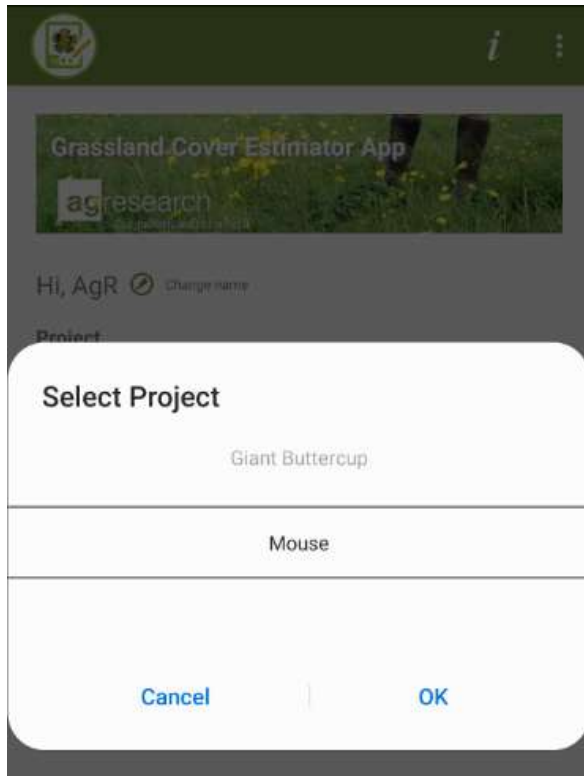


- Tap Save icon to save this new project.
- It will return to Project List page as follows:

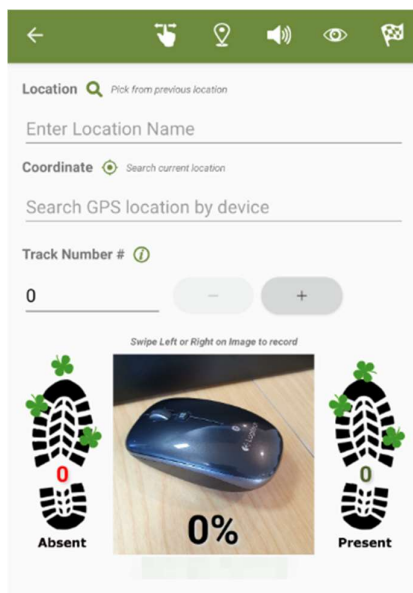


Use New Project Example

- On Main Page user will be able to pick new project as in Project Mouse example:



- On Record Data page, Image taken by camera or selected from Gallery of new Mouse project will be displayed



- **Note:** if Project Image not selected or assigned, default image will be used.

CSV Format

- Filename convention: **AgGCE_RecorderName_YYYYmmddHHMMSS.CSV**
- Content will include title of table as follow:

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Id	ProjectId	ProjectName	LocationName	LocationLatitude	LocationLongitude	TrackNumber	TrackNumberLatitude	TrackNumberLongitude	IsObserved	ObservedLatitude	ObservedLongitude	RecordSequenceCount	UserName	RecordDateTime	PublishDateTime
1	1	Giant Buttercup	abc	-43.64221239	172.4705368	1	-43.64221239	172.4705368	TRUE	-43.64221239	172.4705368	1	{blank}	29/04/2019 3:37:23 p.m.	29/04/2019 3:37:48 p.m.
2	1	Giant Buttercup	abc	-43.64221239	172.4705368	1	-43.64221239	172.4705368	FALSE	-43.64221239	172.4705368	2	{blank}	29/04/2019 3:37:26 p.m.	29/04/2019 3:37:48 p.m.
3	1	Giant Buttercup	abc	-43.64221239	172.4705368	1	-43.64221239	172.4705368	TRUE	-43.6424725	172.4708526	3	{blank}	29/04/2019 3:37:29 p.m.	29/04/2019 3:37:48 p.m.
4	1	Giant Buttercup	abc	-43.64221239	172.4705368	1	-43.64221239	172.4705368	FALSE	-43.64248273	172.4708279	4	{blank}	29/04/2019 3:37:30 p.m.	29/04/2019 3:37:48 p.m.
5	1	Giant Buttercup	abc	-43.64221239	172.4705368	1	-43.64221239	172.4705368	TRUE	-43.64248273	172.4708279	5	{blank}	29/04/2019 3:37:33 p.m.	29/04/2019 3:37:48 p.m.

- Id is unique Id on particular device
- Project Id is Id for project on particular device.
- New Project Id for different Project Name

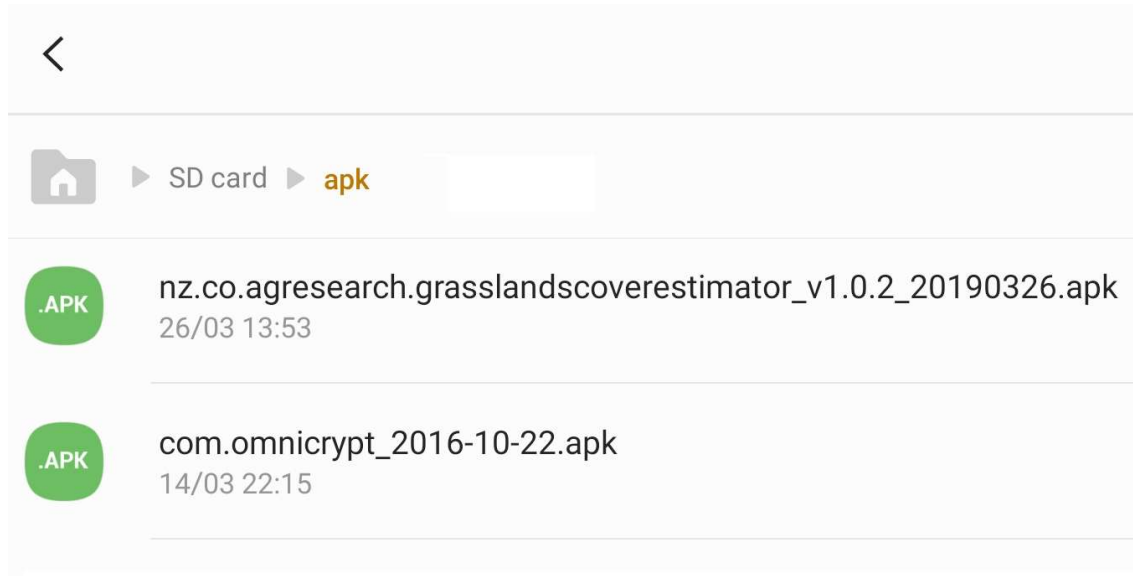
T&DS Solutions Team, 2020



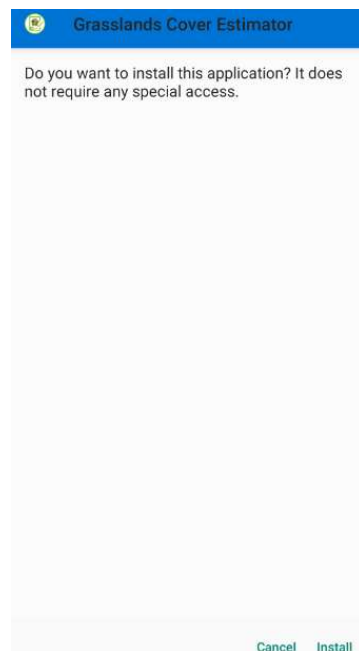
Appendix A

Ad-Hoc Installations *(Internal Release Testers Only)*

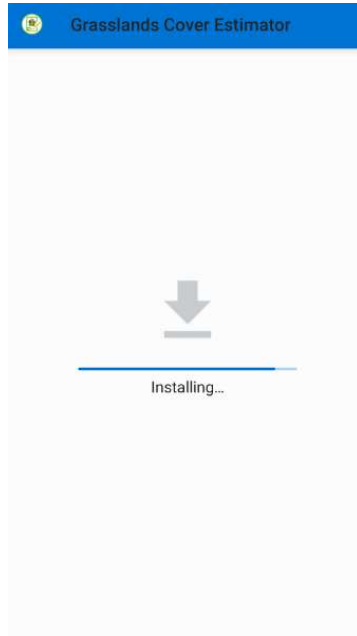
- Copy **apk** file from PC to mobile device (either internal/SD card memory) by using USB cable or Bluetooth connection
- Browse mobile device (using app tools, i.e. My Files (Samsung) or File Manager or equivalent app) as on picture below from SD card apk folder:



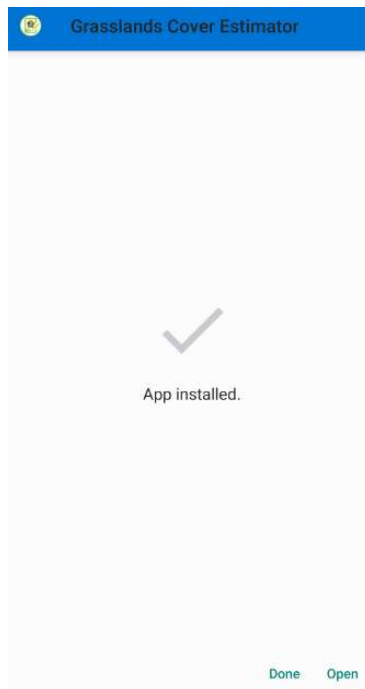
- Tap **nz.co.agresearch.grasslandcoverestimator_v1.0.2_20190326.apk** or any add-hoc grasslands cover estimator apk name to install, the following will be displayed:



- Tap Install:



- Finish Installation:



- Open to start Grasslands Cover Estimator or Done to finish installation and open it from the home app screen on mobile device by tapping the following icon:



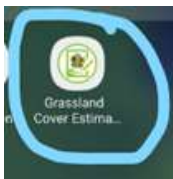
Appendix B

AdHoc Update App Installations *(Internal Release Testers Only)*

Tap apk on your device, the following will be displayed: *(Refer to AdHoc Installation on how to copy apk from PC to device and browse it)*



- Install will update the Grasslands Cover Estimator
- Cancel will not update the app
- Open to start Grassland Cover Estimator by tapping Open on TestFlight or go back to home screen on iOS device by tapping the following icon:



Notes

- *By default Notification will be allowed on Android*